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The Original

1879 CAR-BUILDER'S DICTIONARY'S

ILLUSTRATIONS, CAR PLANS AND ADVERTISEMENTS

AN ILLUSTRATED VOCABULARY OF TERMS WHICH DESIGNATE AMERICAN RAILROAD CARS, THEIR PARTS AND ATTACHMENTS.

COMPILED FOR THE MASTER CAR-BUILDERS' ASSOCIATION

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assisted by

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And Calvin A. Smith, *Secretary of the Master Car-Builders' Association.*

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PREFACE.

Prior to the publication of the first Car-Builder's Dictionary in 1879, the fact that railroad car parts were known by one name at one place and by quite different names at other places was a source of considerable inconvenience to the nation's railroad industry. Therefore, in 1871, a committee was appointed by the Master Car-Builders' Association, now incorporated into the Mechanical Division of the Association of American Railroads, to set up a list of car builder terms that was to be accepted as standard nomenclature in all sections of the country. It is clear that the men whose names appear on the title page of this book succeeded beyond their expectations because today's names of parts of a railroad car are basically the same as when they were first set down in 1879.

Since the names of all car parts mentioned in the pages of this book are numbered and listed with their accompanying illustrations and because it is the intention of the publishers to provide the reader with the Dictionary's fine old engravings and advertisements at a moderate price, the alphabetical listing of dictionary terms that originally appeared in the front of the first edition has been omitted in this volume. In this way, with none of the Dictionary's usefulness for model builders being sacrificed nor the book's appeal to railfans

being impaired, production has been simplified to such an extent that the modern reader can today own a book that up until now has been available only to a limited number of private collectors.

Indeed, this reissue of the original Car-Builder's Dictionary is an attempt to satisfy in part the demands of ever-increasing numbers of model makers, railroad historians, and rail enthusiasts generally for authentic American railroadiana. The publishers believe that the illustrations and car plans found in the 1879 Dictionary supply otherwise unobtainable information regarding rolling stock designs of seventy years ago, just as they feel that the advertisements reproduced in this book serve a unique purpose in recreating the busy scene of nineteenth century railroad activity.

In the seventy years that have passed since the Car-Builder's Dictionary was first issued, the volume has grown from its modest beginnings to today's monumental eighteenth edition of the Car Builders' Cyclopedia, as the Dictionary is now known, which measures eight inches by twelve and one-half inches in size and contains over 1300 pages of essential railroad car information. The modern Car Builders' Cyclopedia, like this copy of the 1879 Car-Builder's Dictionary, is published by the Simmons-Boardman Publishing Corporation, publishers of *Railway Age* and other standard railroad magazines and books.

INDEX.

	PAGE.
Alphabetical List of Terms.....(See Preface).....	1–188
Axles, Wheels, Journal-boxes, etc.....	278–283
Baggage, Express, or Mail Car.....	195, 196
Baggage and Passenger Car.....	197
Baggage-trucks.....	215
Baker Car-heater.....	414–419
Bell-cord Fixtures.....	392, 393
Bodies, Freight-car.....	216–241
Bodies, Passenger-car.....	302–341
Bodies, Parts of Passenger-car.....	346, 347
Bolsters, etc.....	341–344
Bolts, Washers, etc.....	488
Boxes, Journals, etc.....	278–283
Brakes.....	420–428
Brake, Creamer.....	428, 429
Brake, Eames Vacuum.....	439
Brake, Smith Vacuum.....	433
Brake, Westinghouse.....	443–473
Brake, Westinghouse Driving-wheel.....	474–476
Car, Baggage, Express, or Mail.....	195, 196
Cars, Different Kinds.....	190–213
Cars, Freight.....	199–208
Cars, Hand.....	213, 483–487
Car, Mail.....	194
Cars, Passenger.....	190–193, 197, 198
Car, Passenger and Baggage.....	197
Cars, Sleeping.....	190, 365–367
Cars, Street.....	211, 212, 477–482
Cars, Work.....	209
Car-coupler, Janney.....	362–364
Car-heater, Baker.....	414–419
Car-heater, Spear.....	410–413
Car-seats.....	383–388
Car-springs.....	293–300

PAGE.

Car-trucks....242–277
Car-trucks, Details of....276, 277
Car-wheels....284–292
Car-windows....368–370
Coupler, Janney Car....362–364
Creamer-brake....428, 429
Details of Car-trucks....276, 277
Doors and Door-furnishings....402
Door-furnishings....402–404
Draw-gear....348–358
Driving-wheel Brake, Westinghouse....474–476
Eames Vacuum-brake....439
Express, Baggage, or Mail Car....195, 196
Fixtures, Bell-cord....392, 393
Freight-cars....199–208
Freight-car Bodies....216–241
Freight-car Roofs....227
Freight-car Trucks....244–261
Freight-trucks....214
Furnishings, Door....402–404
Furnishings, Passenger-car....389–391
Furnishings, Sleeping-car....376–382
Furnishings, Window....371–374
Gear, Draw....348–358

PAGE.

Hand-cars....213, 483–487
Heater, Baker Car....414–419
Heaters, Spear....410–413
Janney Car-coupler....362–364
Journal-boxes, Wheels, Axles, etc....278–283
Lamps....394–401
Locks....405–407
Mail, Baggage, or Express Car....195, 196
Mail-car....194
Mail-catcher....348
Miller-platform....359–361
Parts of Passenger-car Bodies....346, 347
Passenger and Baggage Car....197
Passenger-cars....190–193, 197, 198
Passenger-car Bodies....302–341
Passenger-car Bodies, Parts of....346, 347
Passenger-car Furnishings....389–391
Passenger-car Steps....345
Passenger-car Trucks....262–275
Platform, Miller....359–361
Plow, Snow....210
Roofs, Freight-car....227
Screw-threads, Tools, etc....489, 490
Seats, Car....382–388

	PAGE.
Sleeping-cars	365–367
Sleeping-car Furnishings	376–382
Smith Vacuum-brake	433
Snow-plow	210
Spear-heaters	410–413
Springs, Car	293–300
Steps, Passenger-car	345
Stoves (See also Heaters)	408, 409
Street-cars	211, 212, 477–482
Tools, Screw-threads, etc	489, 490
Trucks, Baggage	215
Trucks, Car	242–277
Trucks, Freight	214
Trucks, Freight-car	244–261
Trucks, Passenger-car	262–275
Trusses	491
Vacuum-brake	435
Vacuum-brake, Eames	439
Vacuum-brake, Smith	433
Ventilators	375
Washers, Bolts, etc	488
Westinghouse-brake	443–473
Westinghouse Driving-wheel Brake	474–476
Wheels, Axles, Journal-boxes, etc	278–283
Wheels, Car	284–292
Windows, Car	368–370
Window-furnishings	371–374
Work-cars	209

AN INDEX TO ADVERTISEMENTS

In the added pages of the Car-builder's Dictionary.

	Page.
Air Brakes:	
Westinghouse Air-Brake Co., Pittsburgh, Pa	19 20
Anvils:	
Fisher & Norris, Trenton, N. J	33
Axles:	
Baugh Steam Forge Co., Detroit, Mich	57
Berwick Rolling Mill Co., Berwick, Pa	13
Chicago Axle & Forge Co., Chicago, Ill	72
Midvale Steel Works, Philadelphia, Pa	61
Pittsburgh Forge & Iron Co., Pittsburgh, Pa	82
Wilson, Walker & Co., Pittsburgh, Pa	6
Barbed Wire Fencing:	
Washburn & Moen Manufacturing Co., Worcester, Mass	62
Bell Cord:	
Wellington, Bros. & Co., Boston, Mass	65
Brakes:	
Eames Vacuum Brake Co., New York	29
Brake-Shoes:	
Congdon Brake-Shoe Co., Chicago, Ill	64
Brushes:	
John G. McMurray & Co., New York	70
Cars:	
W. C. Allison & Co., Philadelphia, Pa	12
Barney & Smith Manufacturing Co., Dayton, O	84
Billmeyer & Small Co., York, Pa	11
J. G. Brill & Co., Philade phia, Pa	17
Erie Car Works (Limited), Erie, Pa	78
Gilbert & Bush Co., Troy, N. Y	76
Gilbert Car Works, Buffalo, N. Y	76
Harlan & Hollingsworth Co., Wilmington, Del	16
Harrisburg Car Manufacturing Co., Harrisburg, Pa	15
Jackson & Sharp Co., Wilmington Del	71
Jackson & Woodin Manufacturing Co., Berwick, Pa	13
Michigan Car Co., Detroit, Mich	57
Wason Manufacturing Co., Springfield, Mass	14
Car Forgings:	
Wilson, Walker & Co., Pittsburgh, Pa	6
Car Furnishings:	
W. G. Creamer & Co., New York	58
Crerar, Adams & Co., Chicago, Ill	28
J. L. Howard & Co., Hartford, Conn	62
A. G. Newman, New York	70
Post & Co., Cincinnati, O	27
L. G. Tillotson & Co., New York	48
Car Heaters:	
Baker, Smith & Co., New York	68
Bissell & Co., Pittsburgh, Pa	65
James Spear, Philadelphia, Pa	45
Car Lamps:	
Post & Co., Cincinnati, O	27
Car Seats:	
Gardner & Co., New York	69

PAGE.

Car-seat Back and Bunk Springs:
E. L. Bushnell, Poughkeepsie, N. Y. ... 10
H. B. Cobb & Co., Wilmington, Del. ... 55

Car-Shop Tools:
Billings & Spencer Co., Hartford, Conn. ... 76
Goodell & Waters, Philadelphia, Pa. ... 54

Car and Switch Locks:
Post & Co., Cincinnati, O. ... 27
Romer & Co., Newark, N. J. ... 68

Car Trucks:
Thielson Truck Co., Chicago, Ill. ... 56

Car Ventilators:
John S. Hulin, New York ... 59

Car-Wheels:
Baltimore Car-Wheel Co., Baltimore, Md. ... 37
Barney & Smith Mfg. Co., Dayton, O. ... 84
Barnum & Richardson Manufacturing Co., Chicago, Ill. ... 42
Barnum Richardson Co., Lime Rock, Conn ... 41
J. H. Bass, Chicago, Ill. ... 39
Bass Foundry & Machine Works, Fort Wayne, Ind. ... 40
Cayuta Wheel & Foundry Co., Waverly, N. Y. ... 51
Detroit Car-Wheel Co., Detroit, Mich. ... 57
Davenport, Fairbairn & Co., Erie, Pa. ... 78
Ensign Manufacturing Co., Huntington, West Va. ... 42
Hudson Paper Car-Wheel Co., Hudson, N. Y. ... 46
Lobdell Car-Wheel Co., Wilmington, Del. ... 63
Chas. A. Peck's Son, New York ... 43
Thos. Prosser & Son, New York ... 29
Ramapo Wheel & Foundry Co., Ramapo, N. Y. ... 64
Rochester Car-Wheel Works, Rochester, N. Y. ... 73

PAGE.

Russel Wheel & Foundry Co., Detroit, Mich. ... 75
Taylor Iron Works, High Bridge, N. J. ... 80
J. Thomas & Son, Indianapolis, Ind. ... 45
A. Whitney & Sons, Philadelphia, Pa. ... 38

Charcoal Pig-Iron:
Barnum Richardson Co., Lime Rock, Conn. ... 41

Cushioned Helve Hammers:
Bradley & Co., Syracuse, N. Y. ... 76

Draw-Bars:
Continuous Draw-Bar Co., Cincinnati, O ... 31
Griffith, Patterson & Middleton, Cincinnati, O ... 32
N. & A. Middleton & Co., Philadelphia, Pa. ... 66
J. B. Safford, Buffalo, N. Y. ... 30
Wilson, Walker & Co., Pittsburgh, Pa. ... 6

Engravings:
Photo-Engraving Co., New York. ... 36

Flexible Shafts:
Stow Flexible Shaft Co., Limited, Philadelphia, Pa. ... 79

Hand-Cars:
G. S. Sheffield & Co., Three Rivers, Mich. ... 78

Hose (Rubber):
Cleveland Rubber Co., Cleveland, O. ... 49

Hydraulic Jacks:
Richard Dudgeon, New York. ... 43

Interlocking Signals:
Toucey & Buchanan Interlocking Switch Co., Harrisburg, Pa. ... 26

Iron Pipe:
Edward Barr, New York. ... 79

Jacks:
Joyce & Cridland, Dayton, O. ... 8

PAGE.

Journal-Bearings:
D. A. HOPKINS, New York.
Self-fitting Bearings ... 1, 2
Self-aligning Bearings ... 3
Combination, cheap, Bearings ... 4
George R. Meneely & Co., West Troy, N. Y. ... 5
Phosphor-Bronze Smelting Co., Philadelphia, Pa ... 67
Paul S. Reeves, Philadelphia, Pa ... 77

Journal-Box Lids:
Hewitt Box-Lid Co., Chicago, Ill ... 56

Locomotives:
Baldwin Locomotive Works, Philadelphia, Pa ... 24

Machinists' Tools:
Wm. Sellers & Co., Philadelphia, Pa ... 44

Malleable Iron Castings:
Cleveland Malleable Iron Co., Cleveland, O ... 71
McConway, Torley & Co., Pittsburgh, Pa ... 74

Nuts and Bolts:
Hoopes & Townsend, Philadelphia, Pa ... 34

Nut-Locks:
Metcalf, Paul & Co., Pittsburgh, Pa ... 79

Oil (Lubricating):
Plumbago Oil Co., Rochester, N. Y. ... 21

Packing (Sheet, Round and Square):
Cleveland Rubber Co., Cleveland, O ... 49

Padlocks:
D. K Miller Lock Co., Philadelphia, Pa ... 60
Romer & Co., Newark, N. J ... 68

Paint:
Iron-Clad Paint Co., Cleveland, O ... 25

PAGE.

Power Hammers:
Philip S. Justice, Philadelphia, Pa ... 72

Railroad Publications:
National Car-Builder, New York ... 70
Railroad Gazette, New York and Chicago ... 76
Railway Purchasing Agent, Chicago, Ill ... 71
Railway Review, Chicago, Ill ... 71

Railroad Supplies:
E. J. Brooks & Co., New York ... 74
Crerar, Adams & Co., Chicago, Ill ... 28
W. C. Duyckinck, New York ... 79
Morgan & Herrick, New York ... 75
Post & Co., Cincinnati, O ... 27
H. A. Rogers, New York ... 73
L. G. Tillotson & Co., New York ... 48

Refrigerator Cars:
Tiffany Refrigerator Car Co., Chicago, Ill ... 7

Rolling Mills:
Wilson, Walker & Co., Pittsburgh, Pa ... 6

Rubber Goods:
Cleveland Rubber Co., Cleveland, O ... 49

Rubber Steps:
Rubber-Step Manufacturing Co., Boston, Mass ... 79

Springs:
Columbia Car-Spring Co., New York ... 71
Culmer Spring Co., Pittsburgh, Pa ... 47
Detroit Car-Spring Co., Detroit, Mich ... 59
Diamond State Car-Spring Co., Wilmington, Del ... 53
A. French & Co., Pittsburgh, Pa ... 83
Gautier Steel Co., Limited, Johnstown, Pa ... 75
James Jeffries & Sons, Philadelphia, Pa ... 77

PAGE.

Springs (Continued):
N. & A. Middleton & Co. (Limited), Philadelphia, Pa..... 66
Miller, Metcalf & Parkin, Pittsburgh, Pa..... 50
National Car-Spring Co., New York..... 58
Charles W. Pickering & Co., Philadelphia, Pa..... 78
Charles Scott, Philadelphia, Pa..... 52

Springs (Rubber):
Cleveland Rubber Co., Cleveland, O..... 49

Steel Castings:
Chester Steel-Casting Co., Philadelphia, Pa..... 74

Steel:
Midvale Steel Works, Philadelphia, Pa..... 61
Nashua Iron & Steel Co., Nashua, N. H., and Boston, Mass..... 67
Miller, Metcalf & Parkin, Pittsburgh, Pa..... 50
Thomas Prosser & Son, New York..... 29
Randall & Jones, Boston, Mass..... 75
Standard Steel Works, Philadelphia, Pa..... 61

Steel-Tired Car-Wheels:
Thomas Prosser & Son, New York..... 29

Steeline:
Bauer & Co., New York..... 78

Taps and Dies:
Pratt & Whitney Co., Hartford, Conn..... 35

Telegraph Supplies:
L. G. Tillotson & Co., New York..... 48

Tube Expanders:
Richard Dudgeon, New York..... 43
Thomas Prosser & Son, New York..... 29

PAGE.

Varnish:
John Babcock & Co., Boston, Mass..... 74
Clarence Brooks & Co., New York..... 81
Murphy & Co., Newark, N. J., and Cleveland, O..... 18
Parrott Varnish Co., Bridgeport, Conn..... 75
C. C. Reed & Co., New York..... 77
Edward Smith & Co., New York..... 72
Thresher & Co., Dayton, O..... 23
Valentine & Co., New York..... 60

Veneers:
G. W. Read & Co., New York..... 78

Weather Strips:
Patent Metallic Weather Strip Co., New York..... 72

White Lead:
John Jewett & Sons, New York..... 22

Wood Filling:
Bridgeport Wood Finishing Co., New York..... 69

Wood-working Machinery:
J. A. Fay & Co., Cincinnati, O..... 9
Goodell & Waters, Philadelphia, Pa..... 54
J. S. Graham & Co., Rochester, N. Y..... 78
Lane & Bodley Co., Cincinnati, O..... 51
Putnam Machine Co., Fitchburg, Mass..... 79
C. B. Rogers & Co., New York..... 73
S. A. Woods Machine Co., Boston, New York and Chicago..... 73

Wrenches:
L. Coes & Co., Worcester, Mass..... 63

ENGRAVINGS.

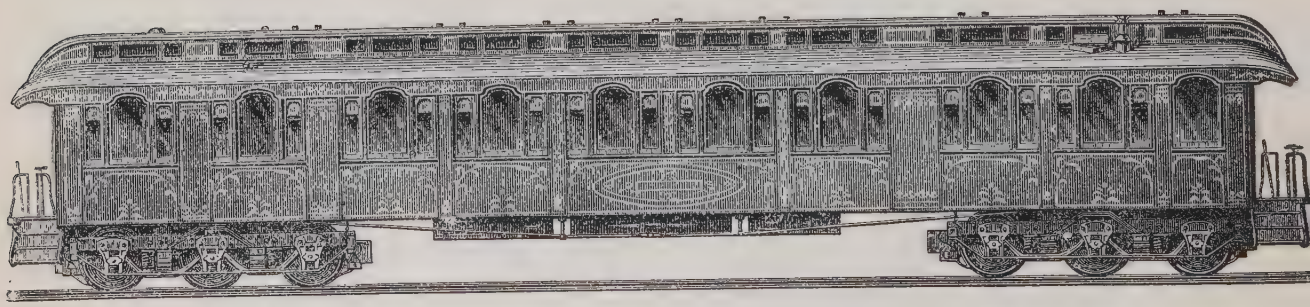


Fig. 1.

SLEEPING AND HOTEL CAR.

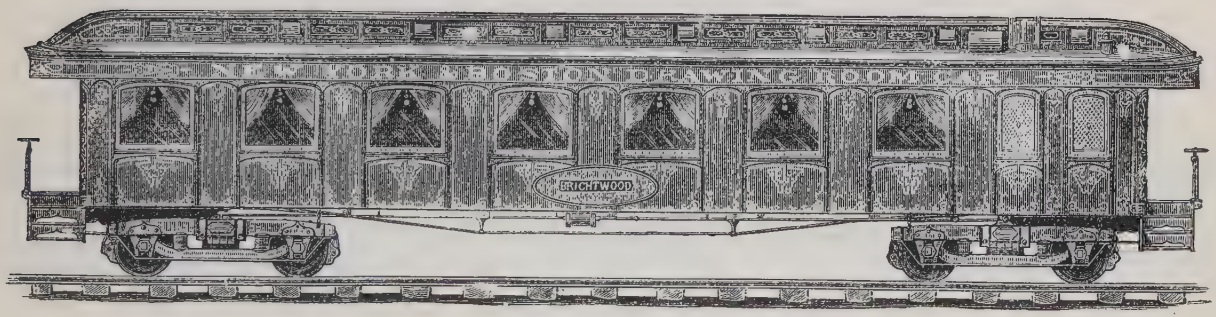


Fig. 2.

DRAWING-ROOM CAR.

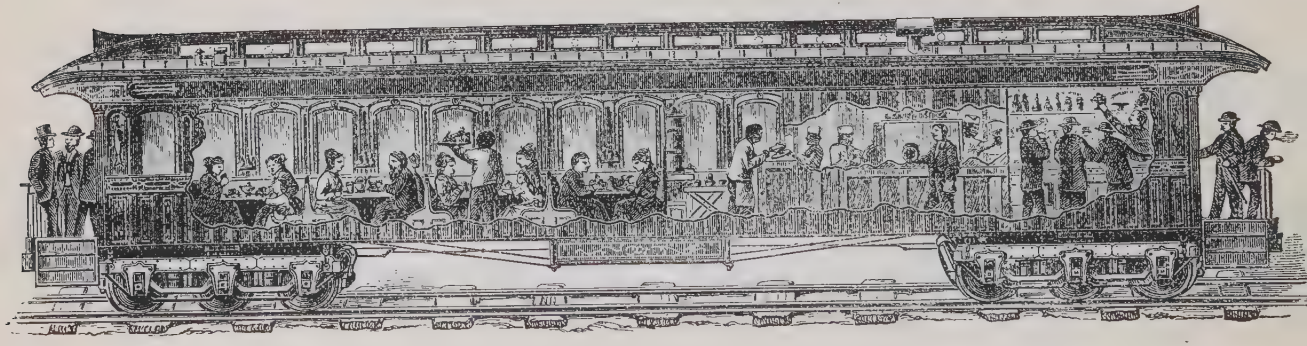


Fig. 3.

Restaurant Car.

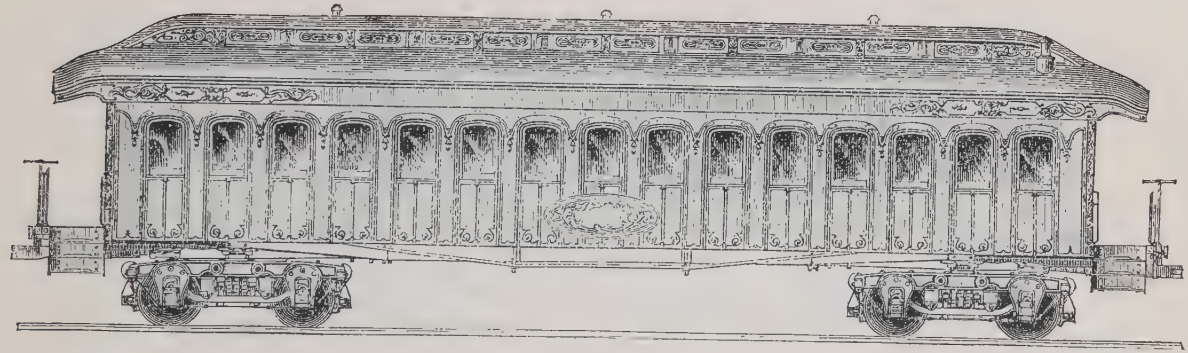


Fig. 4.

PASSENGER CAR OR COACH.

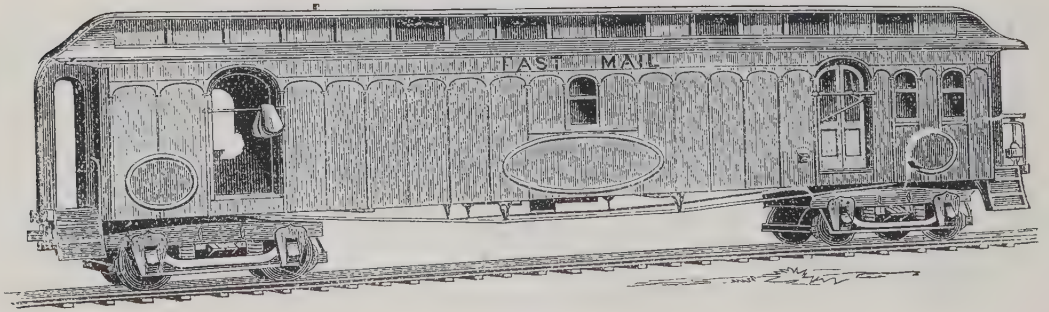


Fig. 5.

POST-OFFICE CAR.

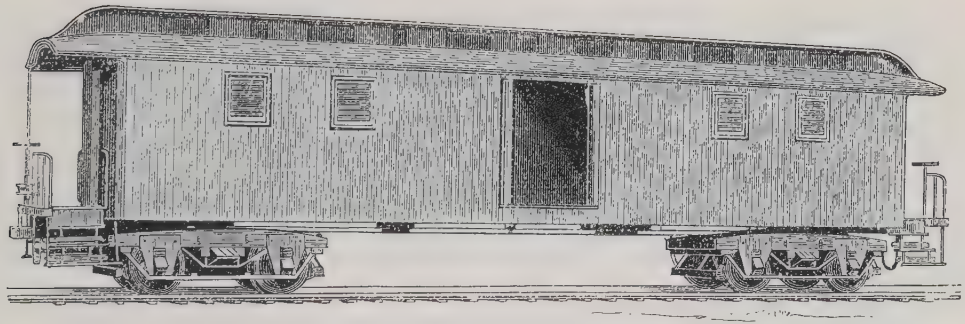


Fig. 6.

EXPRESS, MAIL OR BAGGAGE CAR.

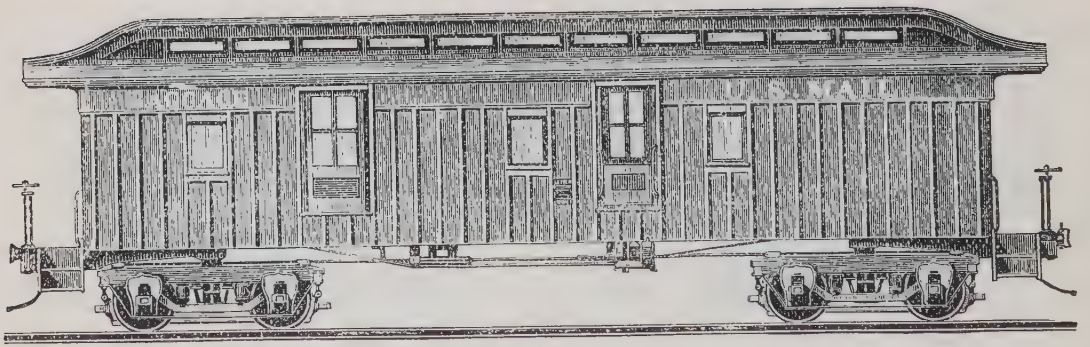


Fig. 7.

COMBINED BAGGAGE AND EXPRESS OR MAIL CAR.

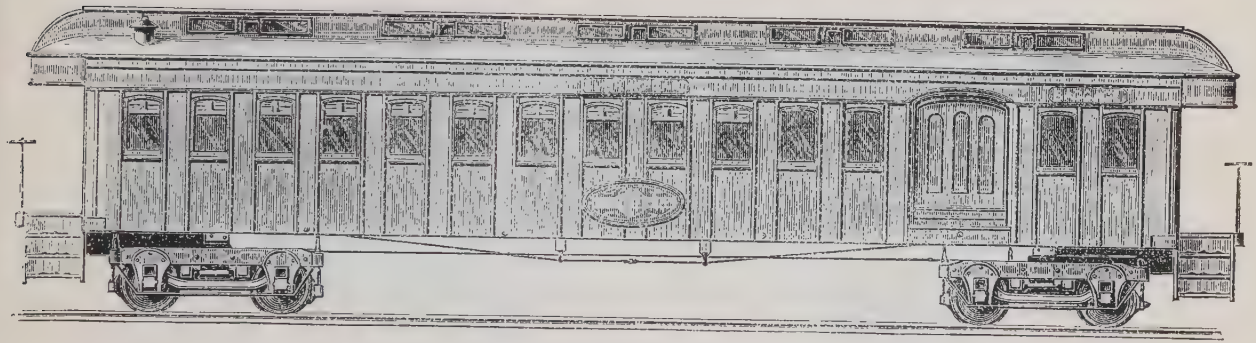


Fig. 8.

Combined Passenger and Mail, Baggage, or Express Car.

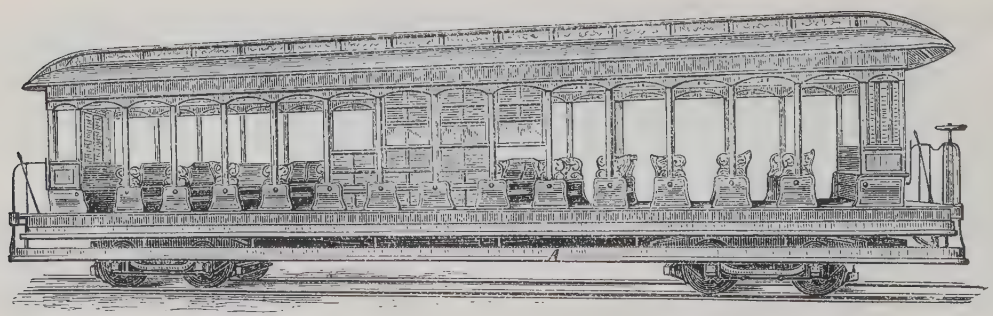


Fig. 9.

SUBURBAN EXCURSION CAR.

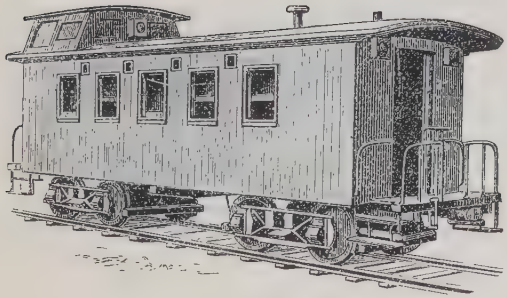


Fig. 10.

EIGHT-WHEELED CONDUCTOR'S OR CABOOSE CAR.

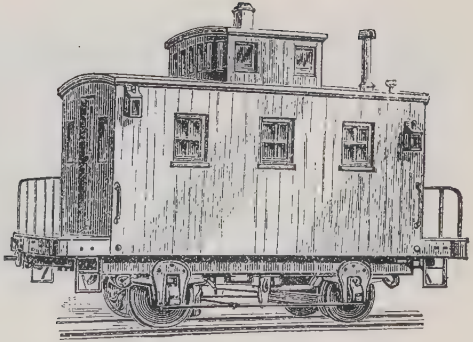


Fig. 11.

FOUR-WHEELED CONDUCTOR'S OR CABOOSE CAR.

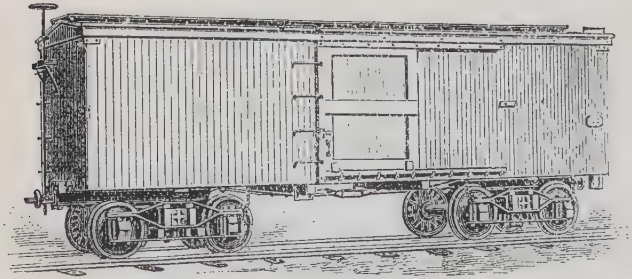


Fig. 12.

EIGHT-WHEELED BOX CAR.

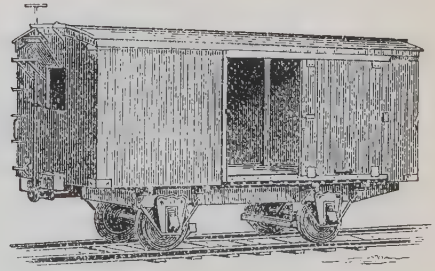


Fig. 13.

FOUR-WHEELED BOX CAR.

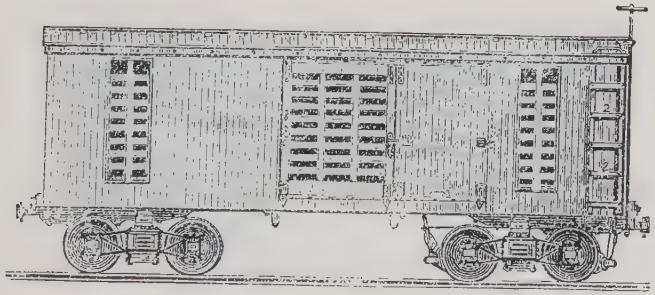


Fig. 14.

COMBINED BOX AND CATTLE CAR.

1. *Ladder-sides.*
2. *Ladder-rounds.*

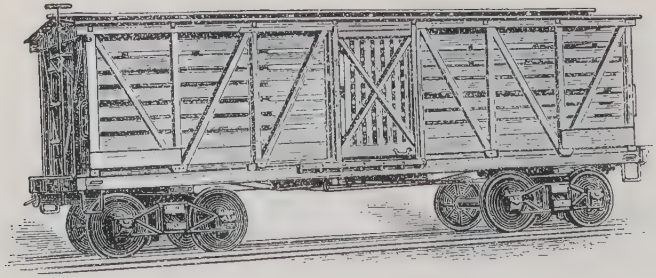


Fig. 15.

Cattle Car

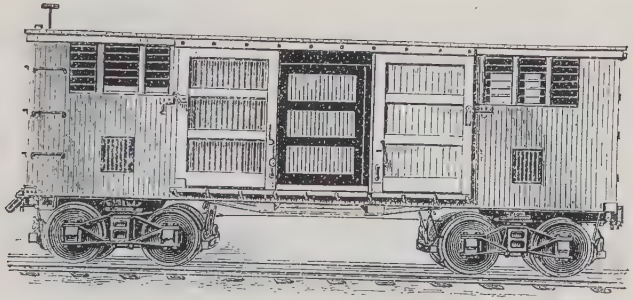


Fig. 16.

HORSE CAR.

Fig. 17.

MILK CAR.

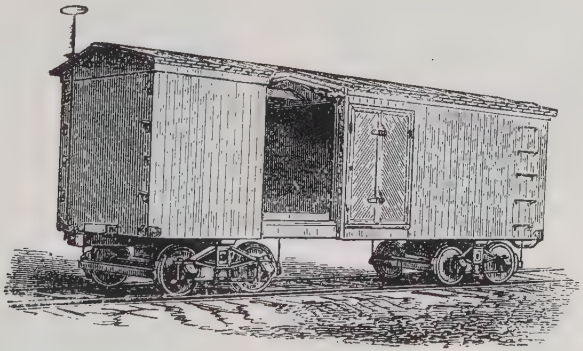


Fig. 18.

REFRIGERATOR CAR.

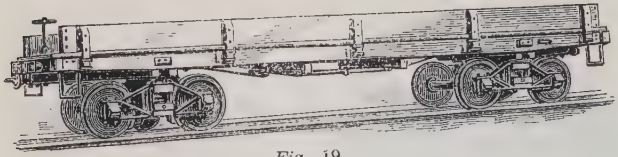


Fig. 19.

EIGHT-WHEELED GONDOLA-CAR.

1. *Stake-pocket.*

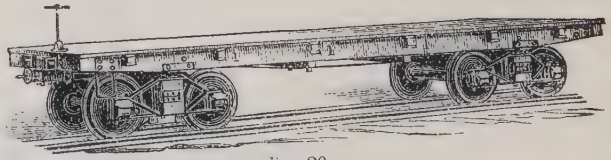


Fig. 20.

FLAT-CAR.

1. *Stake-pocket.*

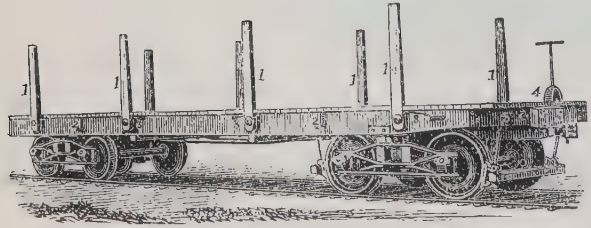


Fig. 21.

FLAT-CAR, *with Stakes.*

1. *Stake.* 2. *Stake-rest.* 3. *Stake-hook.*

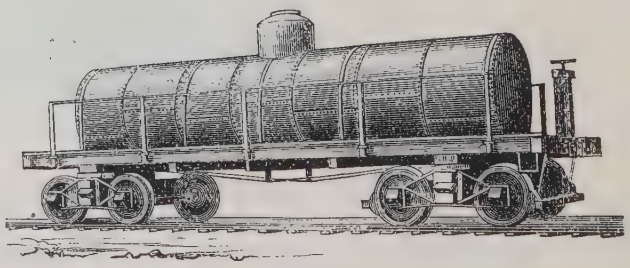


Fig. 22.

TANK OR OIL CAR.

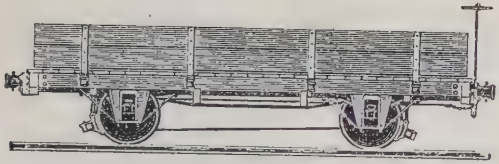


Fig. 23.
FOUR-WHEELED GONDOLA-CAR.

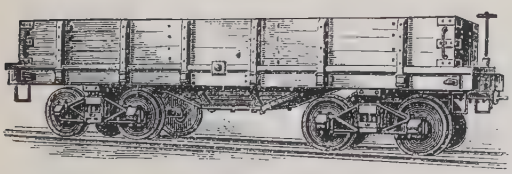


Fig. 24.
HOPPER-BOTTOM GONDOLA-CAR.

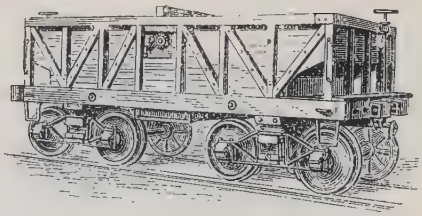


Fig. 25.
EIGHT-WHEELED HOPPER-BOTTOM COAL-CAR.

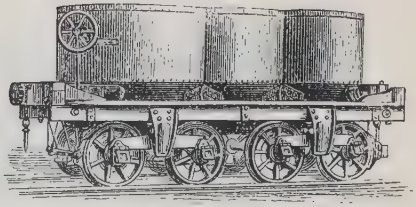


Fig. 26.
IRON-HOPPER COAL-CAR.

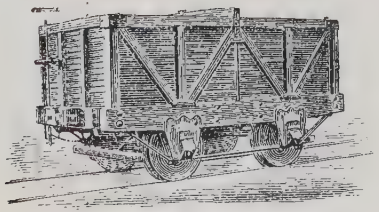


Fig. 27.
FOUR-WHEELED HOPPER-BOTTOM COAL-CAR.

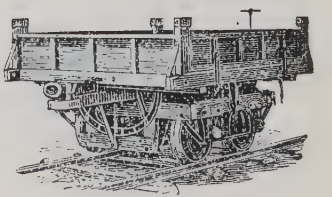


Fig. 29.
FOUR-WHEELED TIP-CAR.

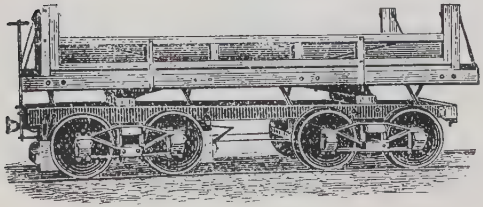


Fig. 28.
EIGHT WHEELED TIP-CAR.

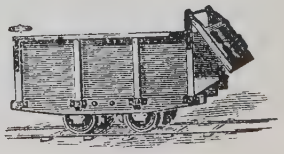


Fig. 30.
MINE-CAR.

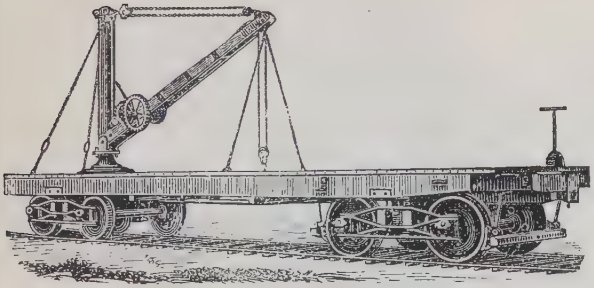


Fig. 31.
DERRICK-CAR.

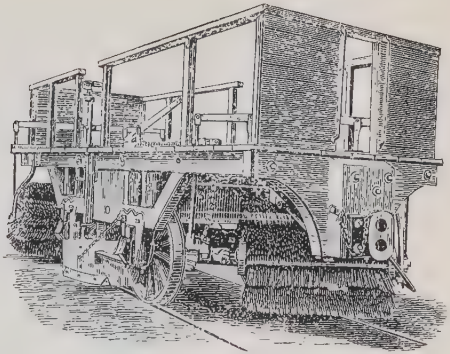


Fig. 33.
SWEEPING-CAR.
A. Snow-scraper.

Fig. 32.
FERRY PUSH-CAR.

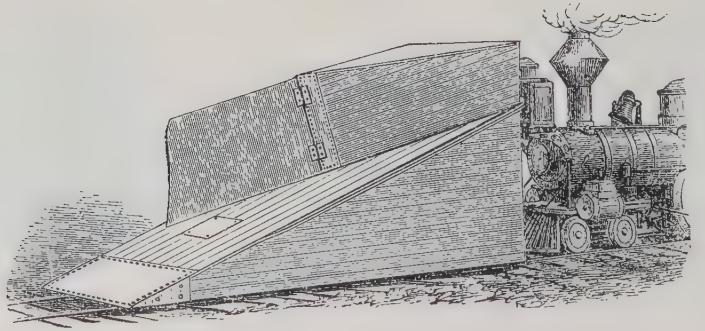


Fig. 34.

SNOW-PLOW.

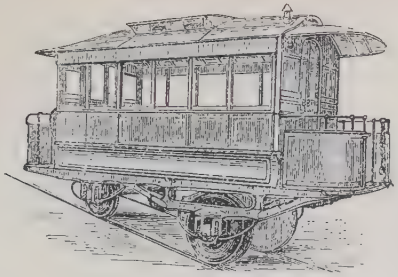


Fig. 35.
INCLINED-PLANE CAR.

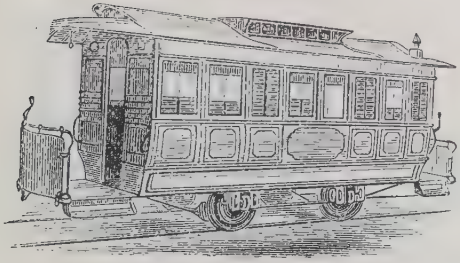


Fig. 36.
TWO-HORSE STREET-CAR,
With two platforms.

Fig. 37.
FARE-BOX STREET-CAR.

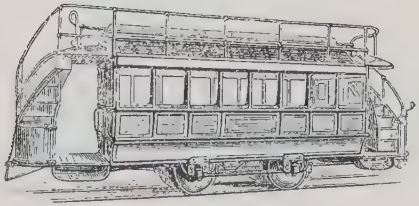


Fig. 38.
DOUBLE-DECK OR TOP-SEAT STREET-CAR.

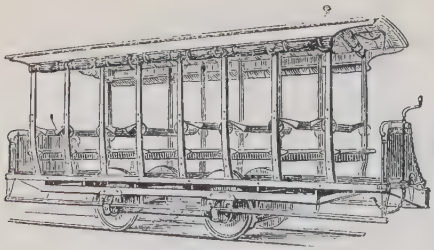


Fig. 39.
SUMMER STREET-CAR,
With seats facing one way.

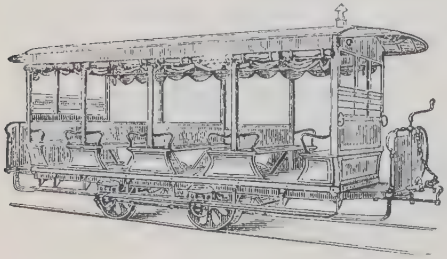


Fig. 40.
SUMMER STREET-CAR,
With seats vis-à-vis.

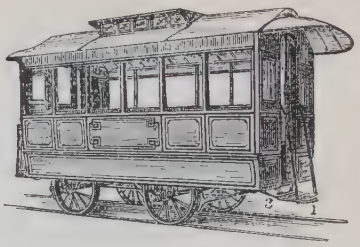


Fig. 41.
ONE-HORSE OR BOB-TAIL STREET-CAR.
1. *End-step.* 2. *Step Hand-rail.* 3. *Step-iron.*

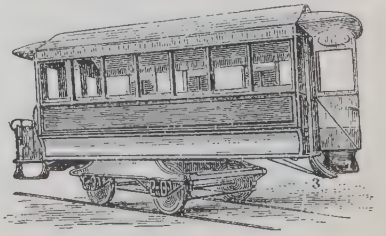


Fig. 42.
REVERSIBLE STREET-CAR.
1. *Door-apron.* 2. *Door Hand-rail.* 3. *Step-iron.*

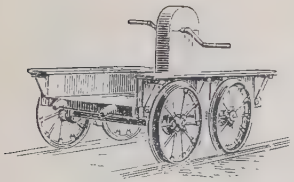


Fig. 43.
CRANK HAND-CAR.

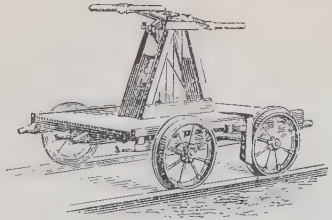


Fig. 44
LEVER HAND-CAR.

Fig. 45.
INSPECTION HAND-CAR.

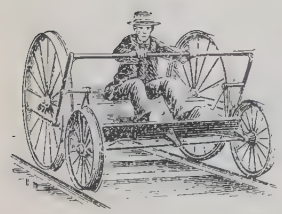


Fig. 46.
EXPRESS HAND-CAR.

Fig. 47.
THREE-WHEELED HAND-CAR

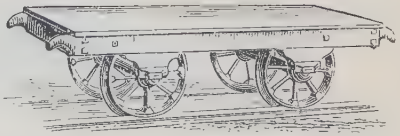


Fig. 48.
PUSH-CAR.

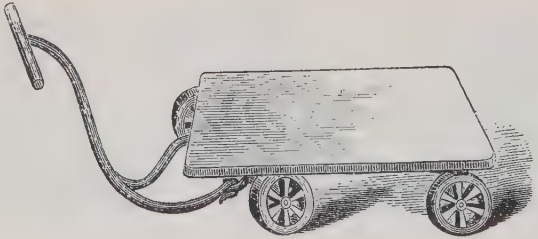


Fig. 49.
WAGON-TRUCK.

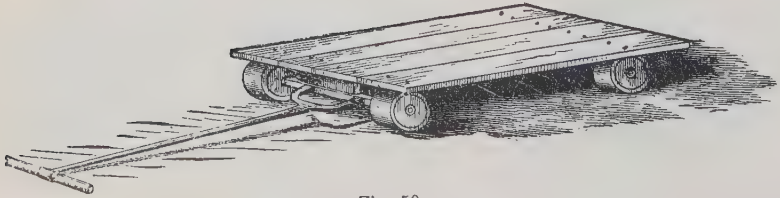


Fig 50.
FREIGHT WAGON-TRUCK.

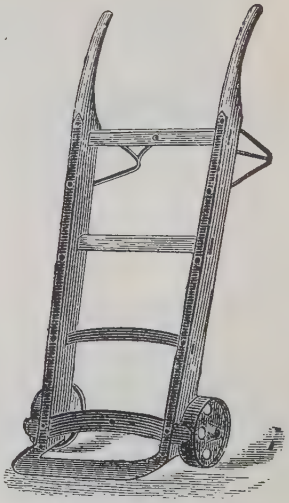


Fig. 51.
FREIGHT BARROW-TRUCK.

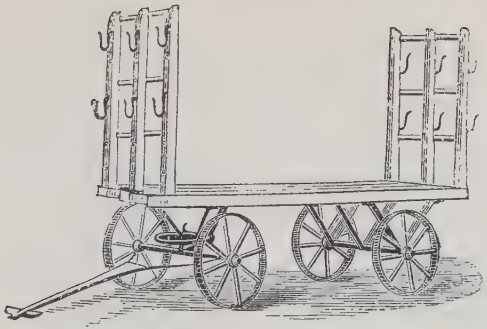


Fig. 52.
BAGGAGE WAGON-TRUCK.

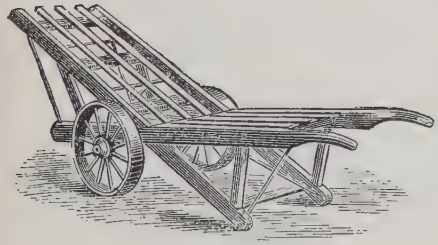


Fig. 53.
BAGGAGE BARROW-TRUCK.

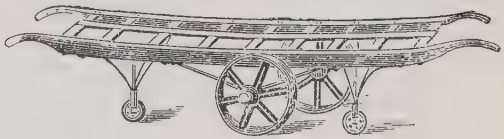


Fig. 54.
BAGGAGE BARROW-TRUCK.

FREIGHT-CAR BODIES.

List of Names of the Parts of Freight-car Bodies which are Designated by the Numbers in Figs. 55–84.

1. *Sill.*
2. *End-sill.*
3. *Intermediate Floor-timbers.*
4. *Centre Floor-timbers.*
5. *Short Floor-timber.*
6. *Brake-hanger Timber.*
7. *Floor-timber Distance-block.*
8. *Floor-timber Braces.*
9. *Sill Knee-iron.*
10. *Sill Tie-rod.*
11. *Transverse Floor-timbers.*
12. *Body-bolster.*
13. *Body-bolster Truss-rod.*
14. *Body-bolster Truss-rod Washer.*
15. *Body-bolster Truss-block.*
16. *Body Side-bearing.*
17. *Body Centre-plate.*
18. *King-bolt.*
19. *Body Truss-rod.*
20. *Body Truss-rod Saddle.*
21. *Body Truss-rod Bearing.*
22. *Cross-frame Tie-timber.*
23. *Draw-bar.*
24. *Draw-spring.*
25. *Auxiliary Buffer-spring.*
26. *Draw-timbers.*
27. *Floor.*
28. *Upper-floor.*
29. *Buffer-block.*
30. *Sill-step.*
31. *Sill-step Stay.*
32. *Dead-blocks.*
32′. *Buffer-beam.*
33. *Side Body-brace.*
34. *Side Body-brace Rod.*
35. *End Body-brace.*
36. *Sill-and-Plate Rod.*
37. *Body-counter-brace.*
38. *Brace-rod Washer.*
39. *Brace-pocket.*
40. *Right-hand Brace-pocket.*
41. *Double Brace-pocket.*
42. *Body-post.*
43. *Corner-post.*
44. *Door-post.*
45. *Corner-post Pocket.*
46. *Plate.*
47. *Plate-rod*
48. *End-plate.*
49. *Girth.*
50. *End-girth.*
51. *End-girth Tie-rod.*
52. *Sheathing.*
53. *Inside-lining.*
54. *Lining-strips.*
55. *Upper Corner-plate.*
56. *Middle Corner-plate.*
57. *Lower Corner-plate.*
58. *Pull-iron.*
59. *Ladder-rounds.*
60. *Ladder-handle.*
61. *Grated-door.*
62. *Grain-door.*
63. *Grain-door Rod.*
64. *Door-sill.*

65. *Top Door-track.*
66. *Bottom Door-track.*
67. *Door-track Bracket.*
68. *Door-hanger.*
69. *Door-brace.*
70 *Door-shoe.*
71 *Open-door Stop.*
72. *Closed-door Stop.*
73. *Door-hasp.*
74. *Door-pin.*
75 *Door-pin Chain.*
76 *Lock-chain.*
77 *Door-guards.*
78. *Door-handle.*
79. *Freight-car Lock.*
80. *Card-rack.*
81. *Carline*, or *Carling.*
82. *Main-carline.*
83. *Purlin.*
84. *Ridge-pole.*
85. *Roof-braces.*
86. *Roof-boards.*
87. *Roof Running-board.*
88. *Roof Running-board Extension.*
89. *Roof Running-board Bracket.*
90. *Eaves-moulding.*
91. *Eaves Fascia-board.*
92. *Roof-step.*
93. *Brake-wheel.*
94. *Brake-shaft.*
95. *Horizontal Brake-shaft.*
96. *Upper Brake-shaft Bearing.*
97. *Lower Brake-shaft Bearing.*
98. *Brake-shaft Step.*
99. *Brake-shaft Bracket.*
100. *Brake-step.*
101. *Brake step Bracket.*
102. *Corner-handle.*
103. *Brake Ratchet-wheel.*
103′. *Brake-pawl.*
104. *Horizontal Brake-shaft Chain.*
105. *Brake-shaft-chain Sheave.*
106. *Tank, for Tank-car.*
106′. *Tank-head.*
107. *Tank-band.*
108. *Tank-dome.*
109. *Dome-head.*
110. *Man-hole.*
111. *Man-hole Cover.*
112. *Man-hole Ring.*
113. *Man-hole Hinge.*
114. *Tank-valve.*
115. *Tank-valve Seat*, or *Tank-nozzle.*
116. *Tank-valve Cage.*
117. *Tank-valve Rod.*
118. *Tank-nozzle Cap.*
119. *Running-board.*
120. *Running-board Brackets.*
121. *Hand-rail.*
122. *Hand-rail Post.*
123. *Drop-bottom.*
124. *Drop-bottom Chain.*
125. *Drop-bottom Hinge.*
126. *Drop-door Beam.*
127. *Strap, for Drop-door Beam.*
128. *Eye-bolt.*
129. *Winding-shaft.*
130. *Winding-shaft Ratchet-wheel.*
131. *Pawl, for Winding-shaft Ratchet-wheel.*
132. *Dog, for Pawl of Winding-shaft Ratchet-wheel.*
133. *Winding-shaft Plate.*
134. *Inclined End-floor.*
135. *Inclined Side-flooring.*
136. *Top Side-rail.*
137. *Top End-rail.*
138. *Draw-bar Cross-timber.*
139. *Draw-gear Tie-rod.*
140. *Coupling-pin.*
141. *Train Signal-lamp.*
142. *Brake-head.*
143. *Brake-beam.*
144. *Brake-hanger.*
145. *Brake-lever.*
146. *Brake-lever Fulcrum.*
147. *Brake-lever Guide.*
148. *Brake-lever Bracket.*

149. *Brake-lever-bracket Brace.*
150. *Brake-shaft Chain.*
151. *Brake-shaft Connecting-rod.*
152. *Secondary Brake-rod.*
152. *Lower Brake-rod.*
153. *Inclined Floor-timbers.*
154. *Tip-car Door.*
155. *Rocker.*
156. *Rocker-bearing.*
157. *Rocker-bearing Timber*
158. *Rocker-bearing-timber Hanger.*
159. *Rocker-timber.*
160. *Side-rest.*
161. *Centre-stop.*
162. *Side-stop.*
163. *Corner-post Brace.*
164. *Equalizing-bar Pedestal.*
165. *Journal-box.*
166. *Pedestal Brace-tie-bar.*
167. *Pedestal Stay-rod.*
168. *Pedestal Tie-bar.*
169. *Pedestal-timber.*
170. *Spring-hanger.*
171. *Spring-hanger Iron.*
172. *Pedestal.*
173. *Draw-bar Friction-plate.*
174. *Clear-story.*

For list of names of the parts designated by the numbers in the engraving, see page 216.

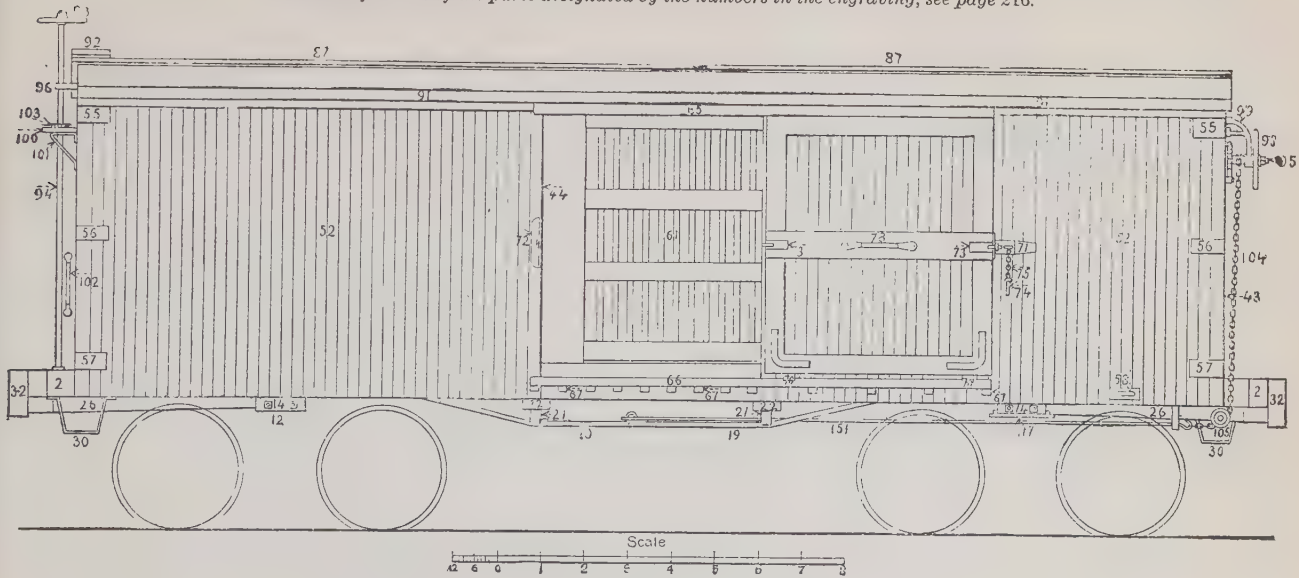
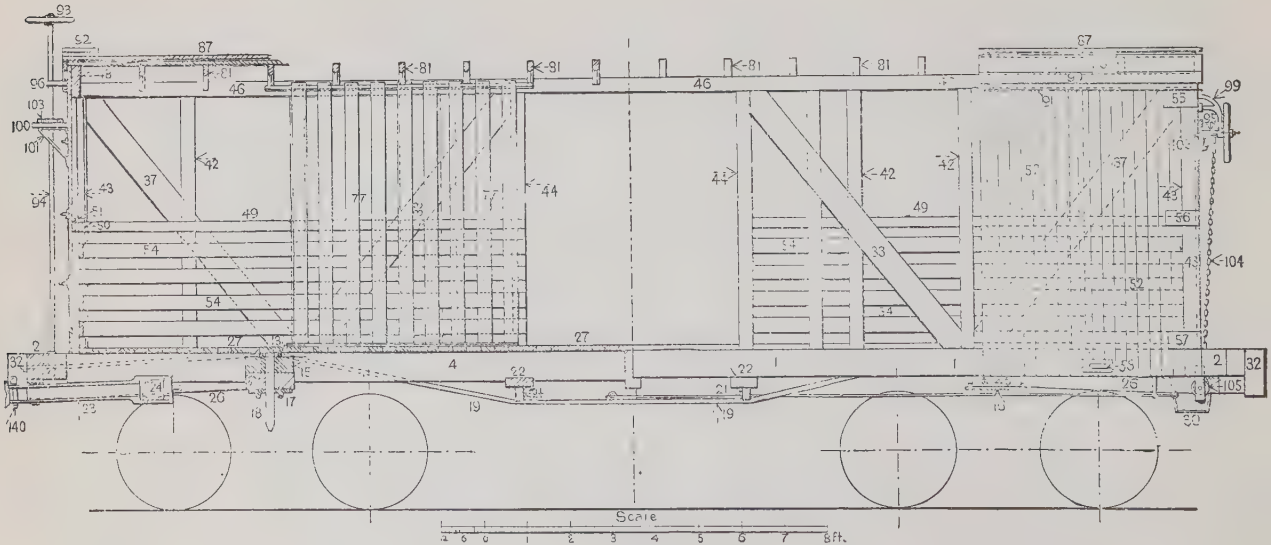


Fig. 55.

BOX-CAR BODY, CENTRAL RAILROAD OF NEW JERSEY.

Side View.

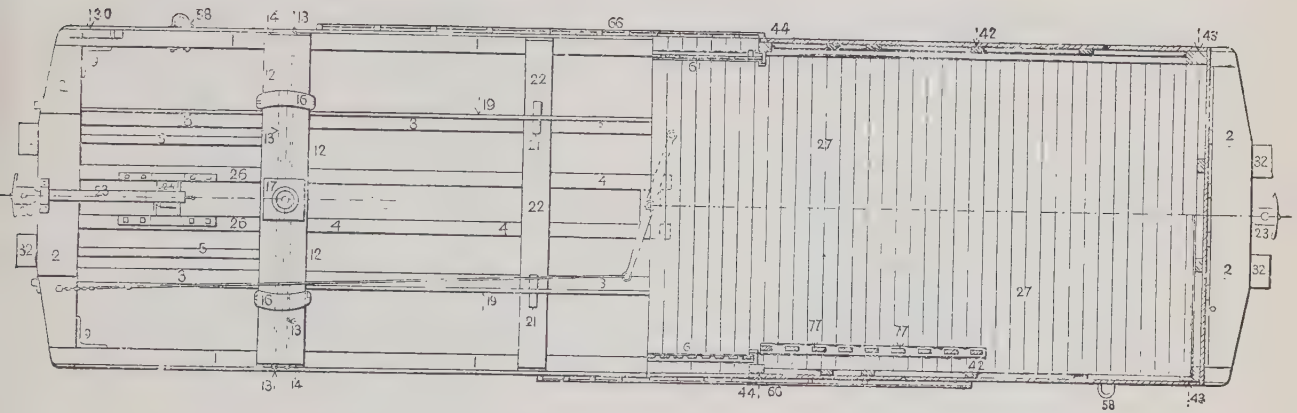
For list of names of the parts designated by the numbers in the engraving, see page 216.



Longitudinal Section. *Fig. 56.* *Outside View, showing Framing.*

BOX-CAR BODY, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engraving, see page 216.



Half Plan, showing Framing. *Fig. 57.* *Half Plan, showing Floor.*

BOX-CAR BODY, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engravings, see page 216.

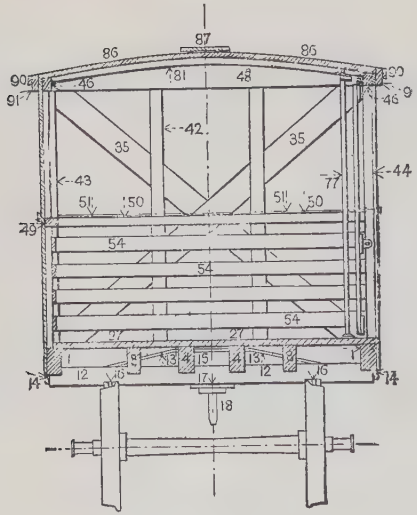


Fig. 58.
Transverse Section.

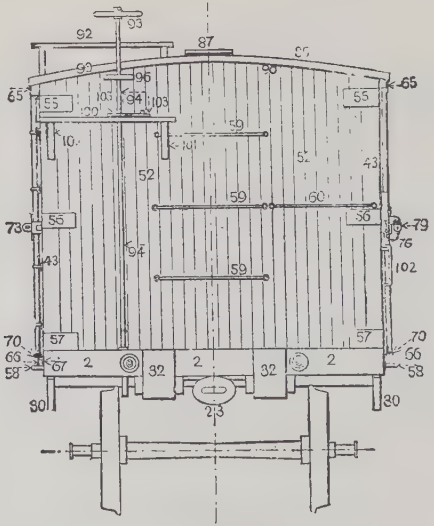


Fig. 59.
End View.

BOX-CAR BODY, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engraving, see page 216.

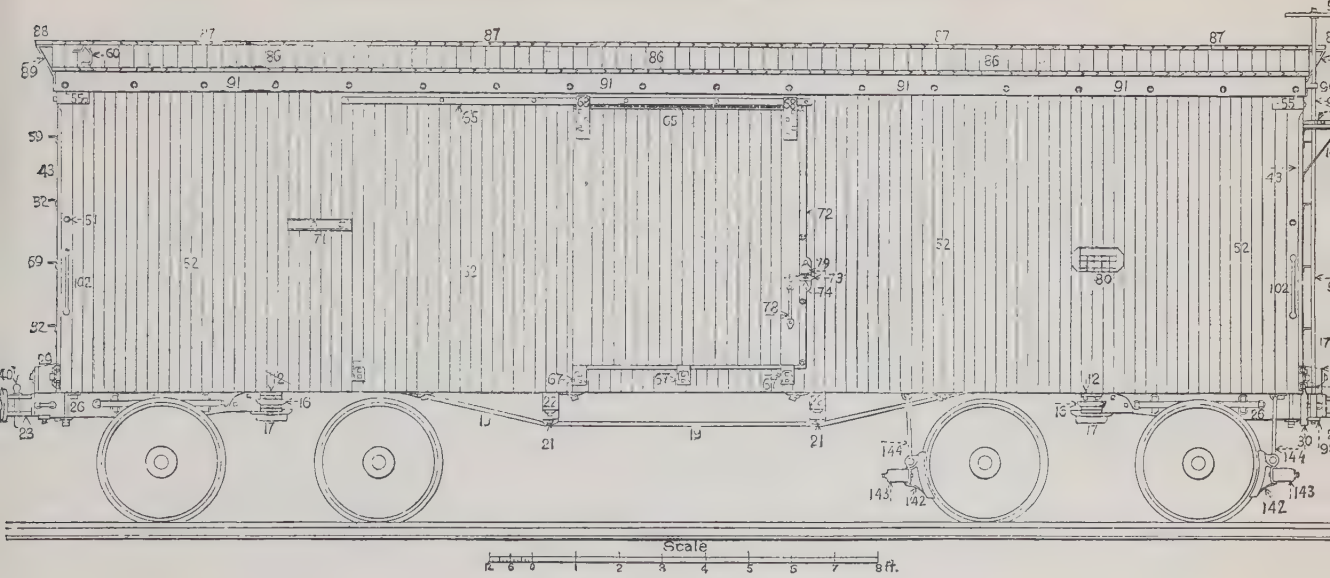


Fig. 60.

BOX-CAR BODY, NEW YORK CENTRAL RAILROAD.

Side View.

For list of names of the parts designated by the numbers in the engraving, see page 216.

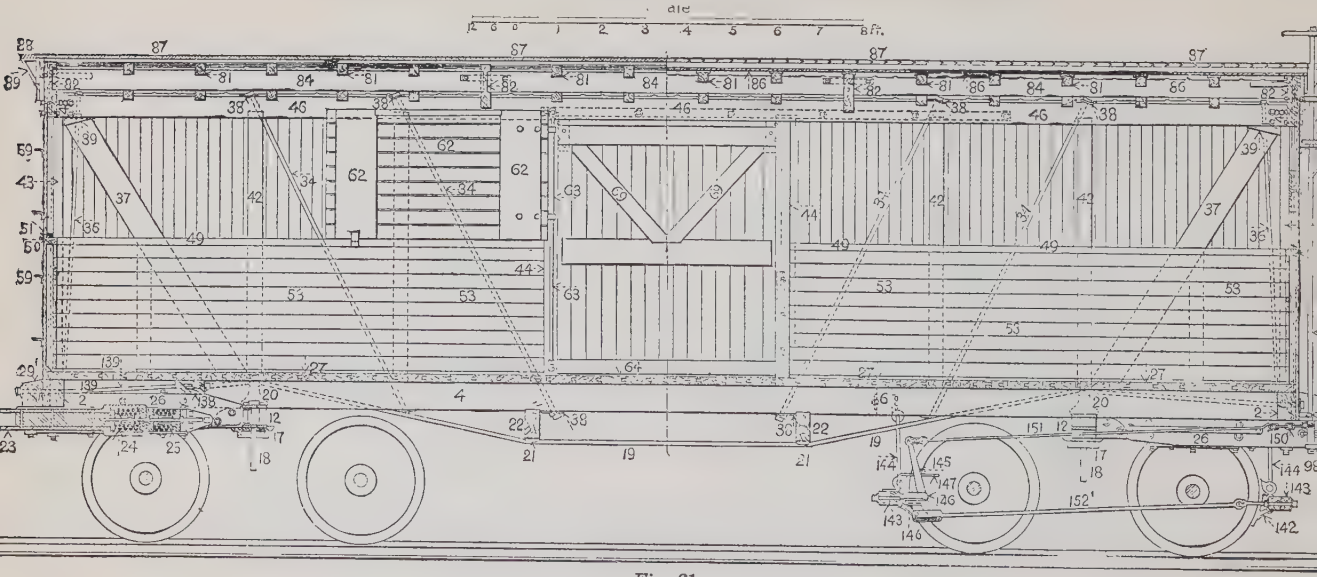
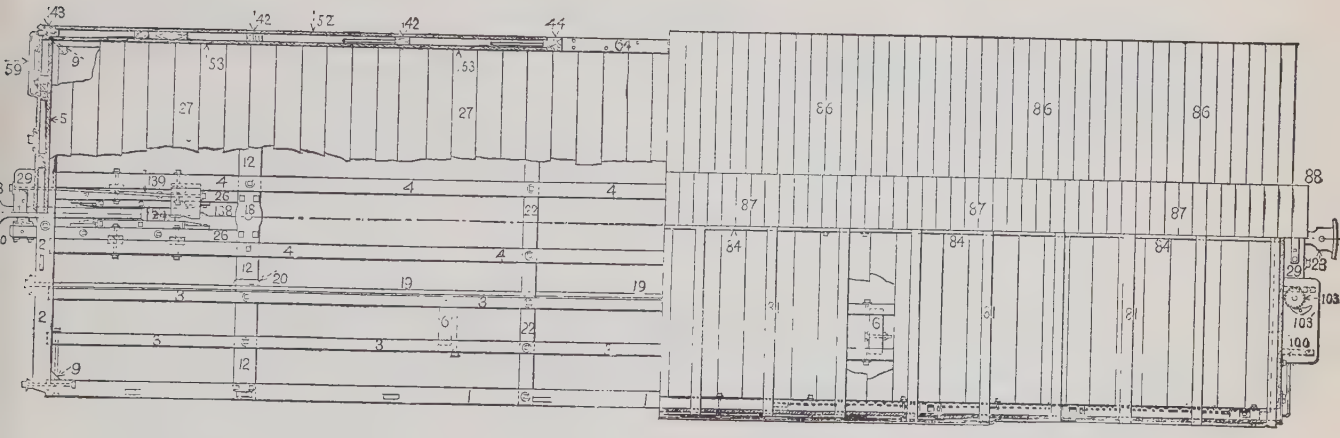


Fig. 61.

BOX-CAR BODY, NEW YORK CENTRAL RAILROAD.

Longitudinal Section.

For list of names of the parts designated by the numbers in the engraving, see page 216.



Half Plan, showing Framing. *Half Plan, showing Roof.*

Fig. 62.

BOX-CAR BODY, NEW YORK CENTRAL RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 216.

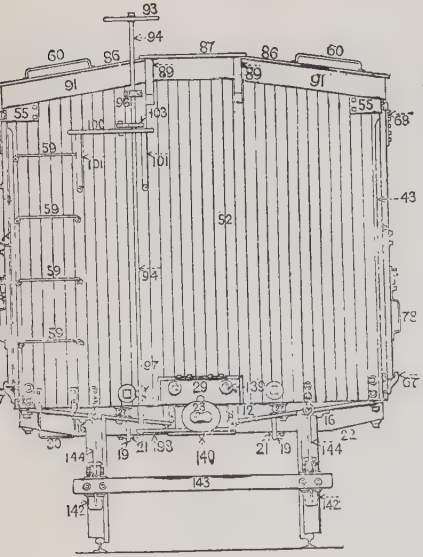


Fig. 63.
End View.

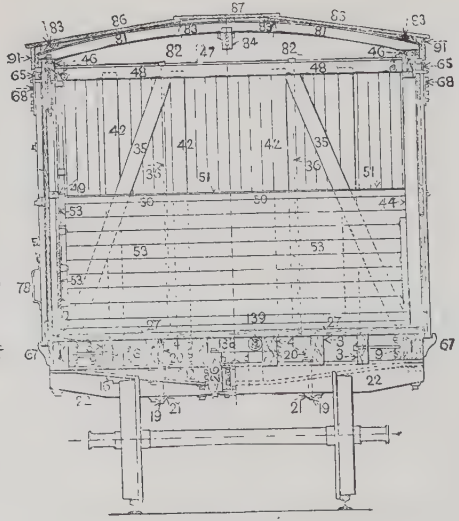


Fig. 64.
Transverse Section.

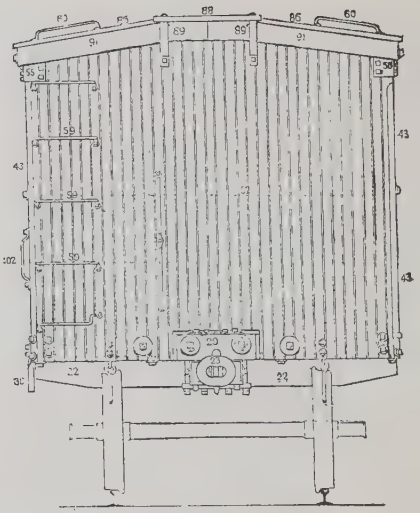
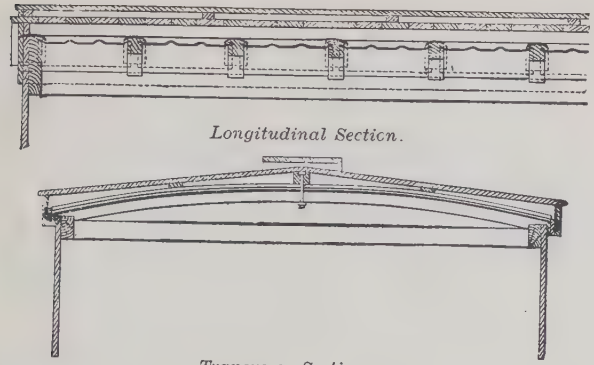


Fig. 65.
End View.

BOX-CAR BODY, NEW YORK CENTRAL RAILROAD.



Longitudinal Section.

Transverse Section.

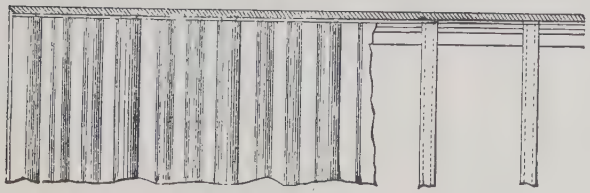


Fig. 66. Plan.

WINSLOW CAR-ROOF.

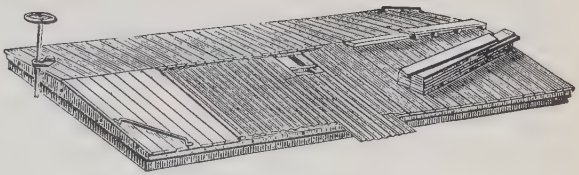


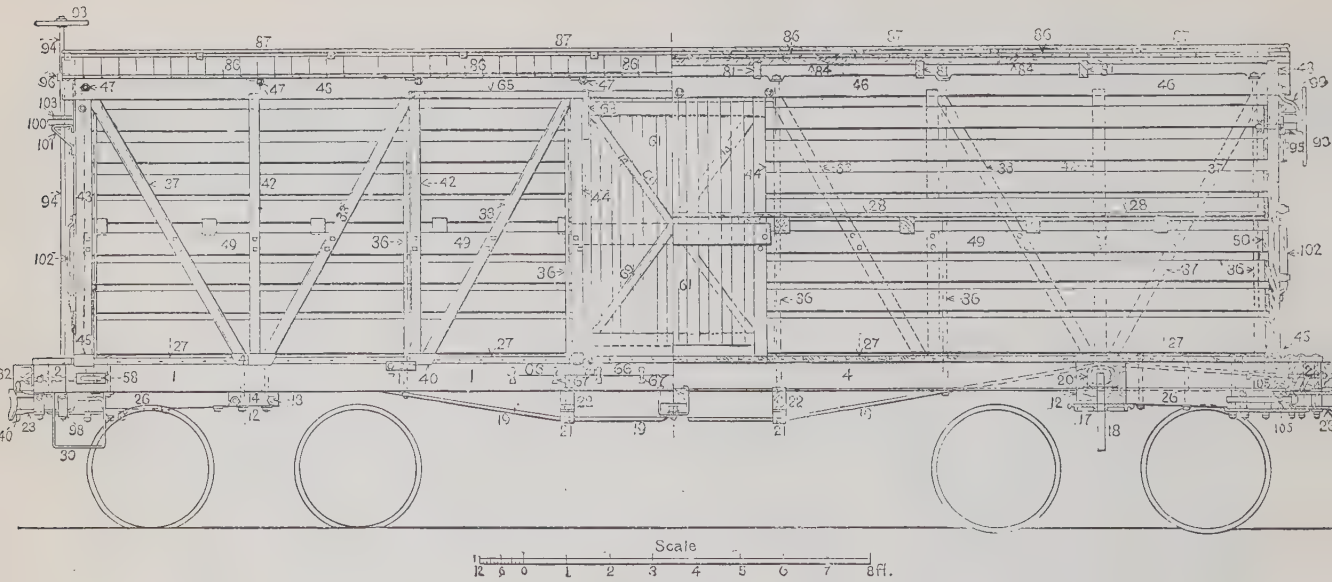
Fig. 67.

CORRUGATED-METAL CAR-ROOF.

Fig. 68.

SECTION OF DOUBLE-BOARD CAR-ROOF.

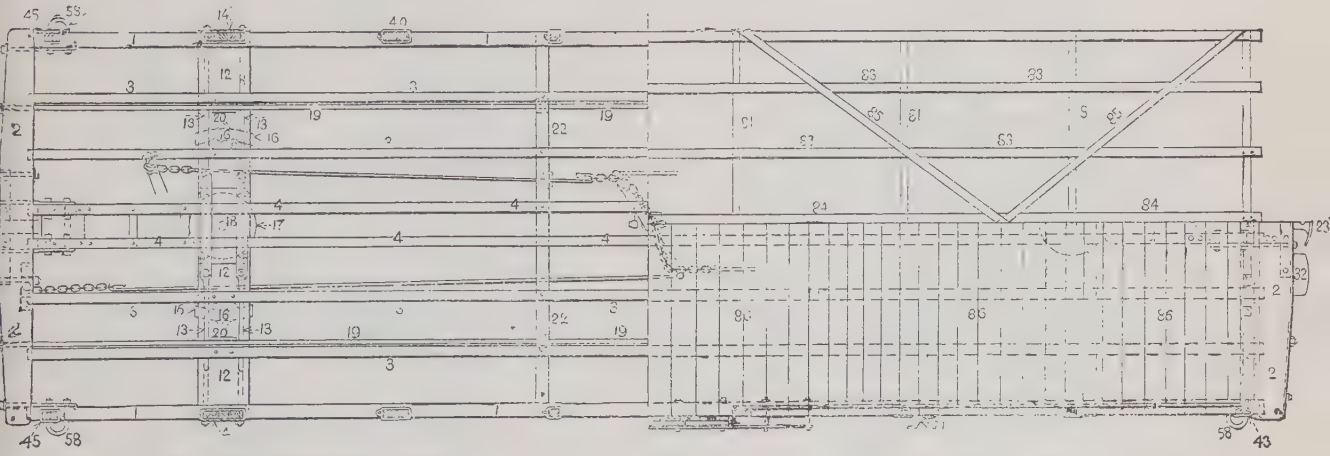
For list of names of the parts designated by the numbers in the engraving, see page 213.



Side View. *Fig. 69.* *Longitudinal Section.*

CATTLE-CAR BODY, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 213.



Half Plan, showing Floor Framing *Fig. 70.* *Half Plan, showing Roof.*

CATTLE CAR BODY, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 216.

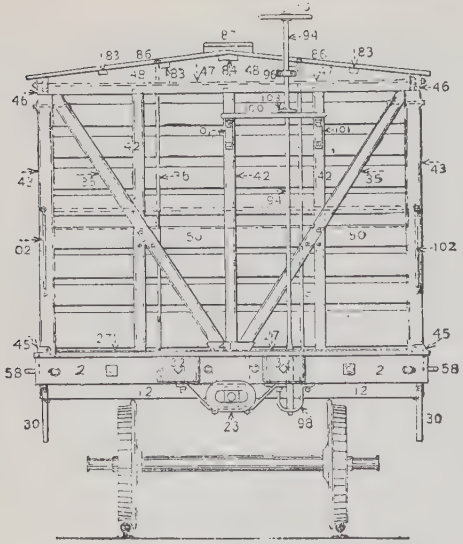


Fig. 71.
End View.

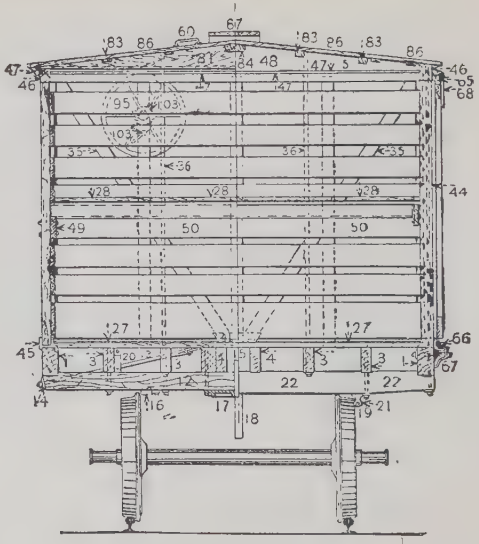
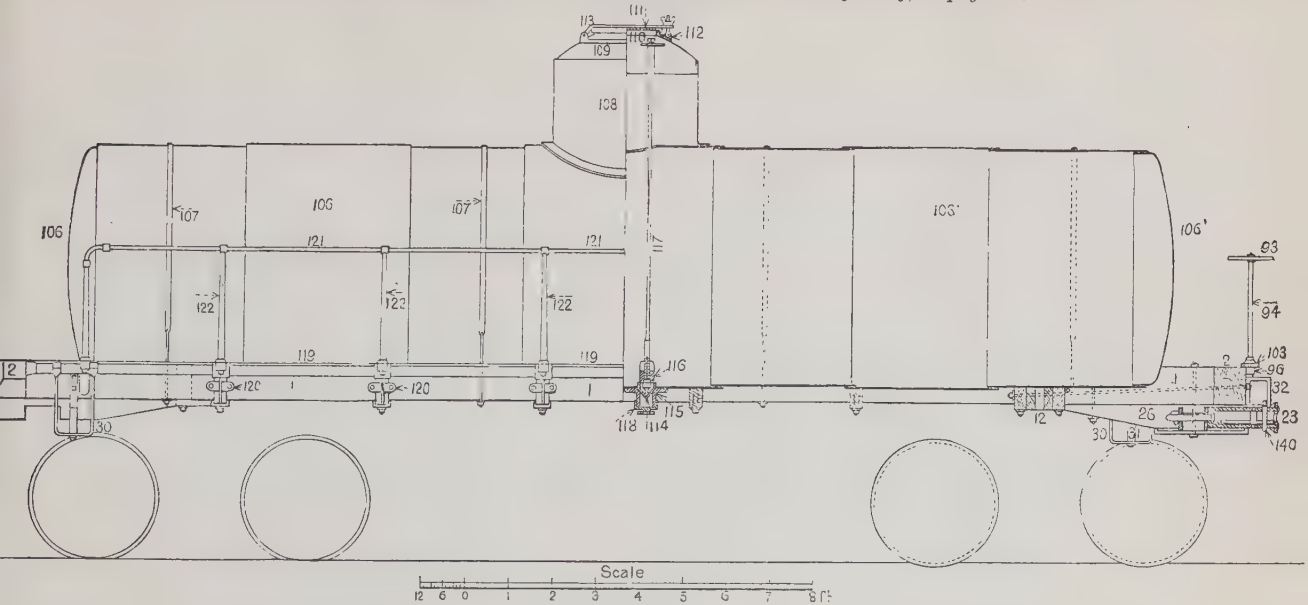


Fig. 72.
Transverse Section.

CATTLE-CAR BODY, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 216.

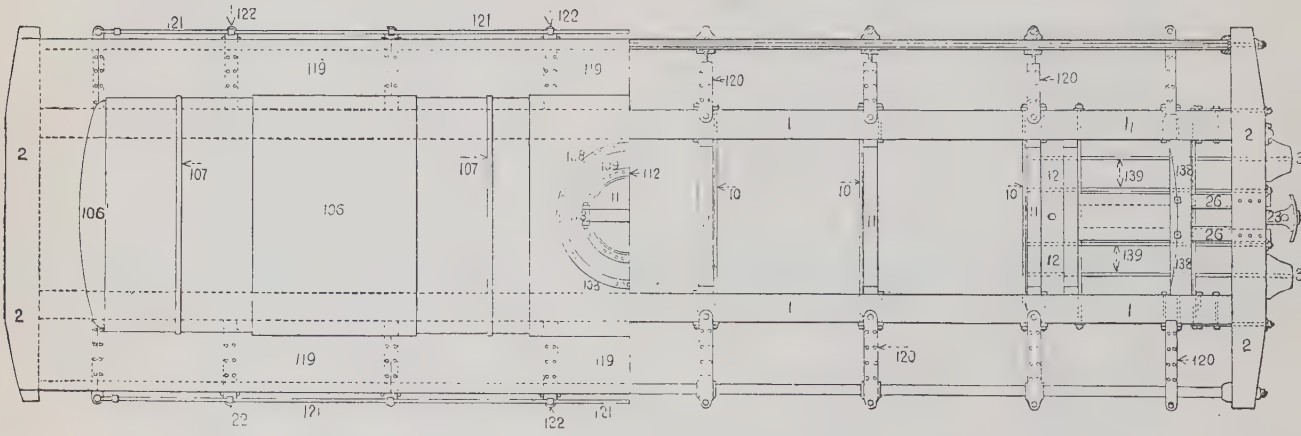


Outside View.

Fig. 73.
TANK OR OIL CAR.

Longitudinal Section.

For list of names of the parts designated by the numbers in the engraving, see page 216.



Half Plan. *Fig. 74.* *Half Plan, showing Floor Framing.*

TANK OR OIL CAR.

For list of names of the parts designated by the numbers in the engravings, see page 216.

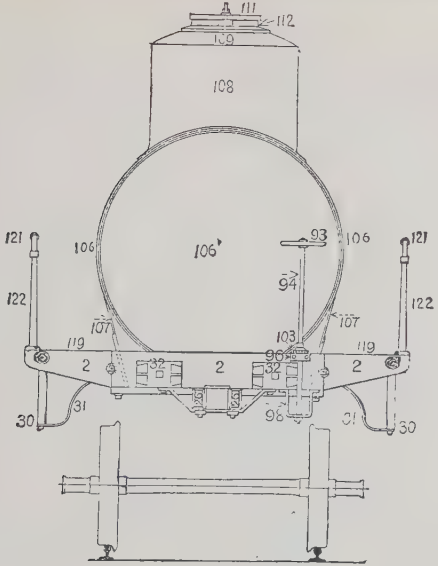


Fig. 75.
End View.

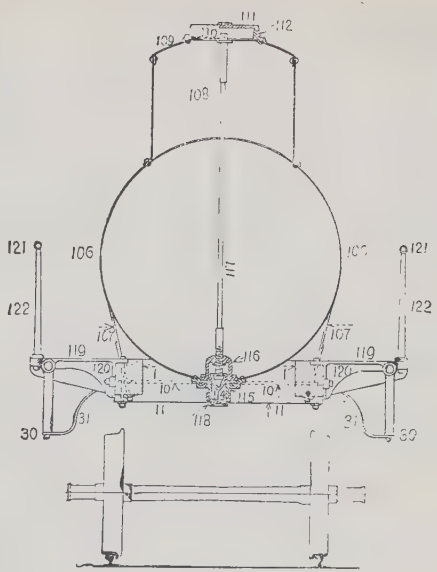
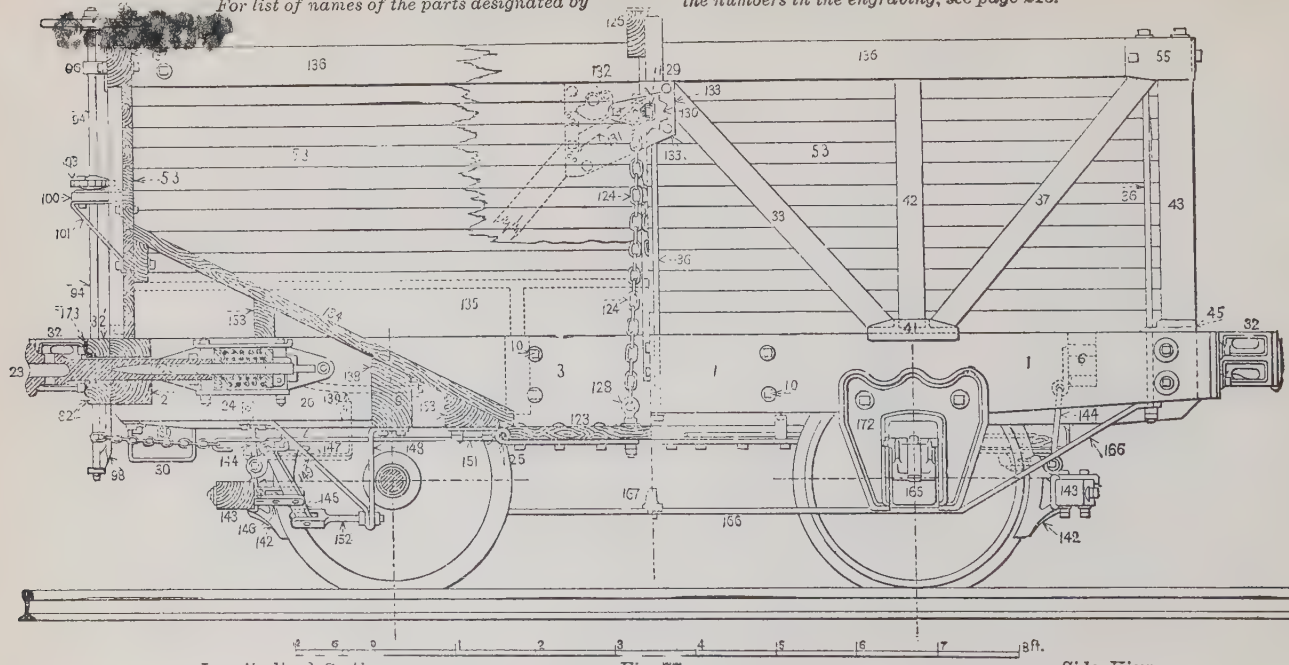


Fig. 76.
Transverse Section.

TANK OR OIL CAR.

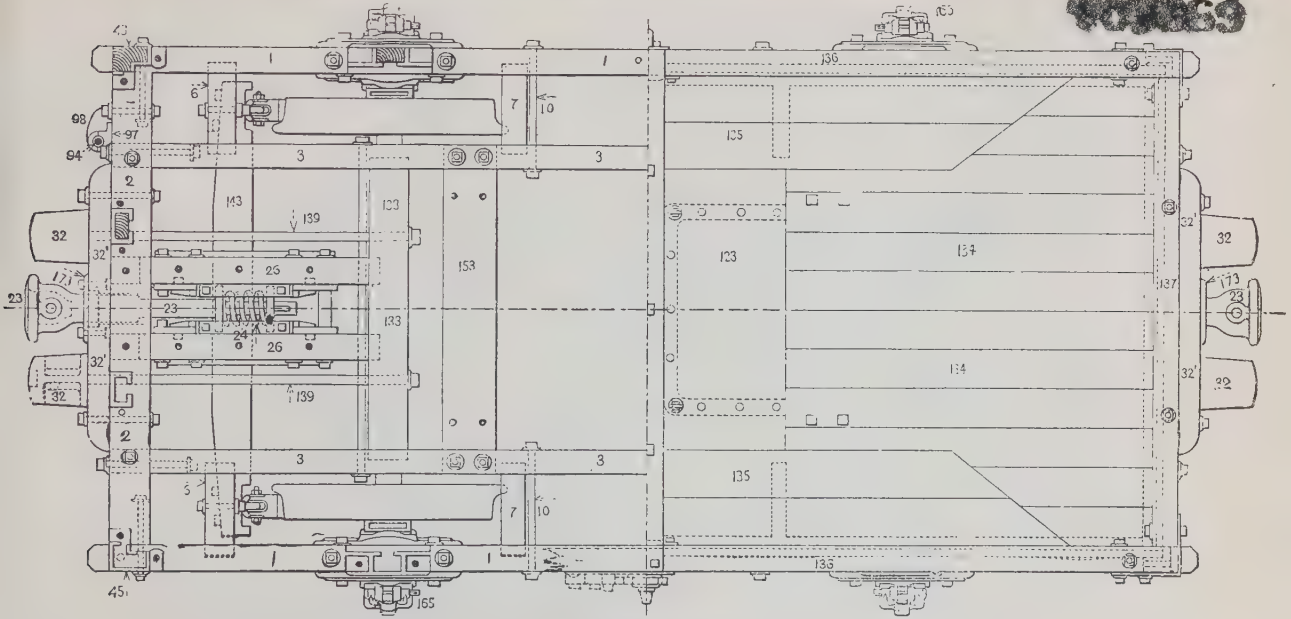
For list of names of the parts designated by the numbers in the engraving, see page 216.



Longitudinal Section. *Fig. 77.* *Side View.*

FOUR-WHEELED HOPPER-BOTTOM COAL-CAR, NEW YORK CENTRAL RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 216.



Half Plan, showing Floor Framing. *Fig. 78.* *Half Plan.*

FOUR-WHEELED HOPPER-BOTTOM COAL-CAR, NEW YORK CENTRAL RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 216.

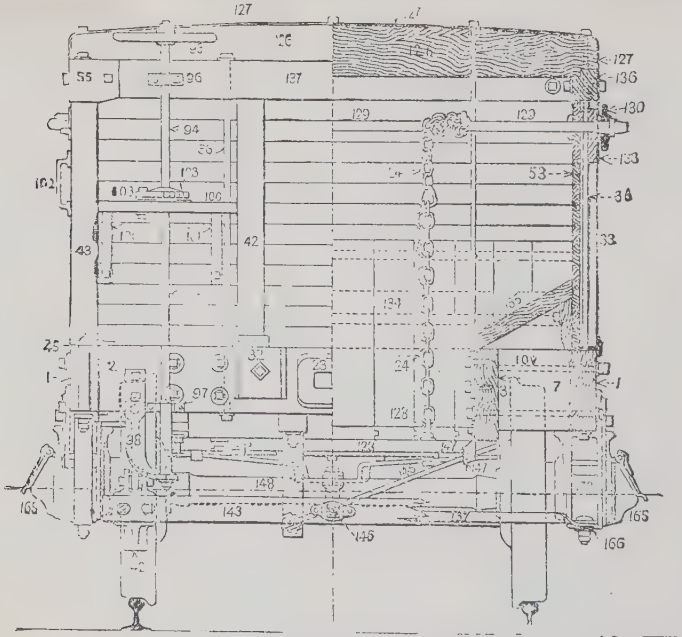


Fig. 79.

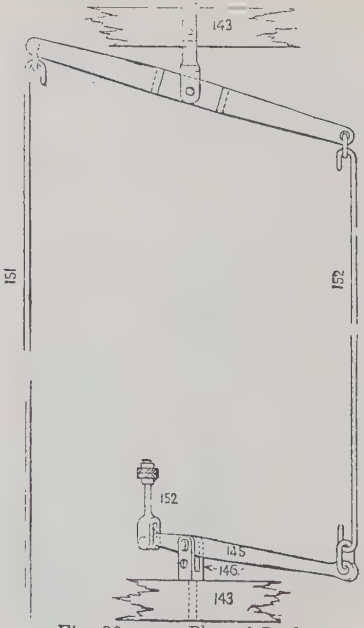


Fig. 80.

FOUR-WHEELED HOPPER-BOTTOM COAL-CAR, NEW YORK CENTRAL RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 216.

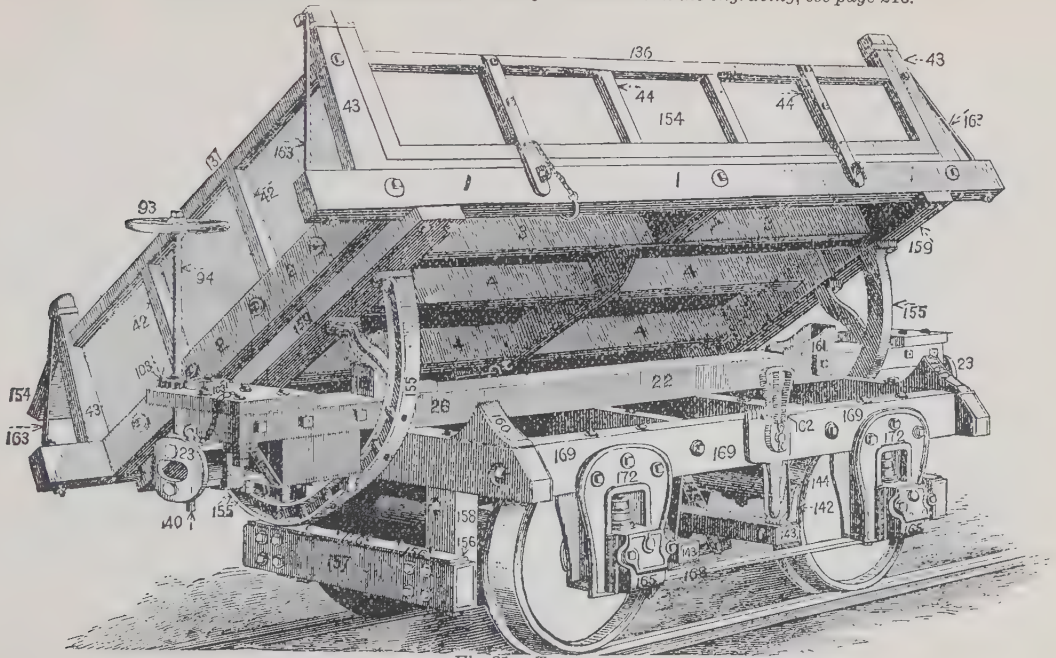
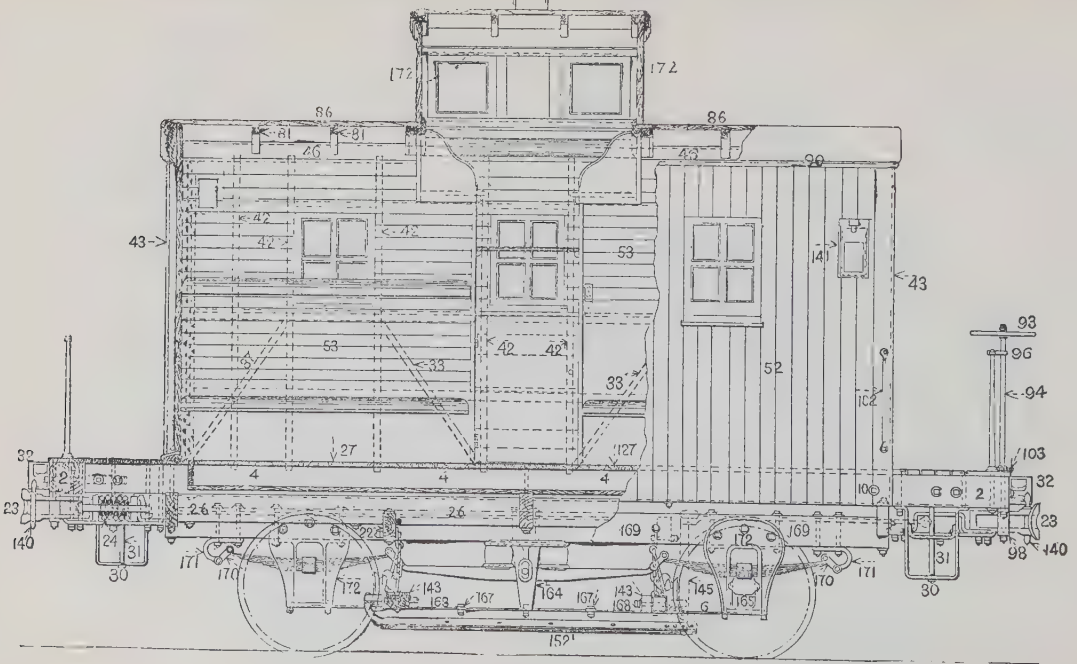


Fig 81. TIP-CAR.

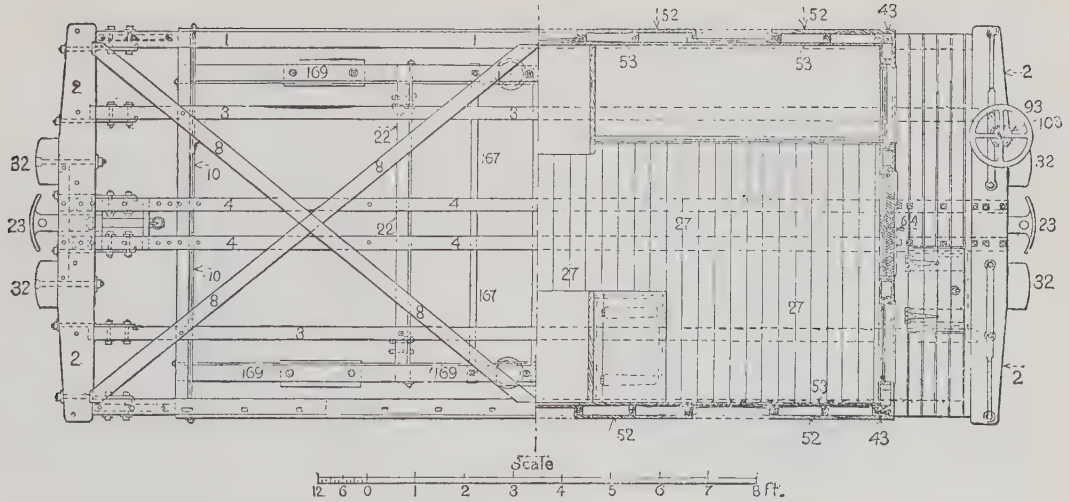
For list of names of the parts designated by the numbers in the engraving, see page 216.



Longitudinal Section. *Fig. 82.* *Side View.*

FOUR-WHEELED CONDUCTOR'S CAR, PENNSYLVANIA RAILROAD.

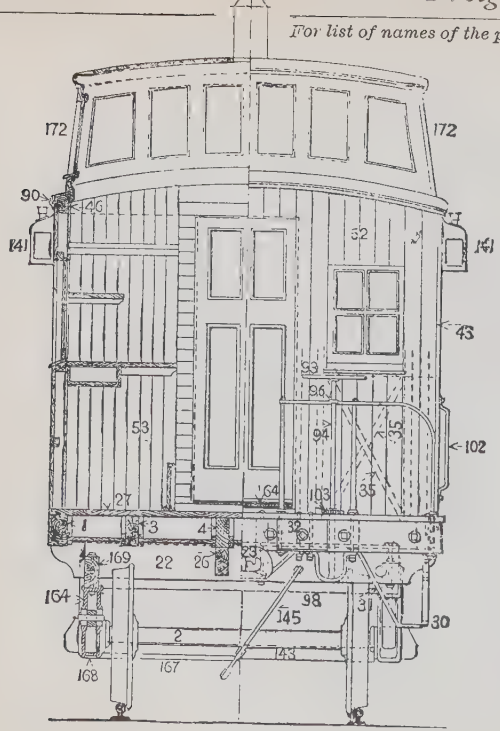
For list of names of the parts designated by the numbers in the engraving, see page 216.



Half Plan, showing Floor Framing. *Fig. 83.* *Half Plan, showing Inside.*

FOUR-WHEELED CONDUCTOR'S CAR, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 216.



Transverse Section. *Fig.* 84. *End View.*

FOUR-WHEELED CONDUCTOR'S CAR, PENNSYLVANIA RAILROAD.

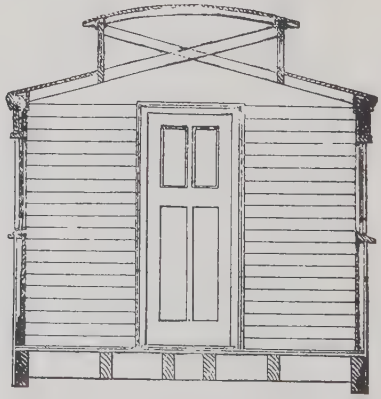


Fig. 85.

X CAR-ROOF.

Transverse Section.

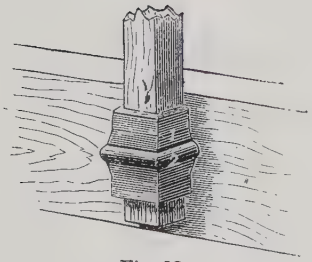


Fig. 86.

STAKE-POCKET.

1. *Stake-pocket.*
2. *Stake pocket U-bolt.*

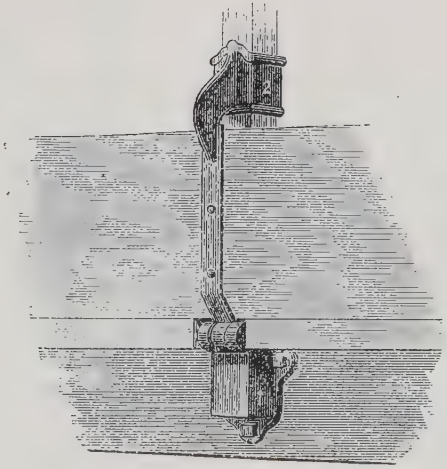


Fig. 87.

STAKE-SLEEVE.

1. *Stake-pocket.*
2. *Stake-sleeve.*

CAR TRUCKS.

List of Names of the Parts of Car-trucks which are Designated by the Numbers in Figs. 88–133.

1. *Car-wheel.*
2. *Car-axle.*
3. *Journal-box.*
4. *Journal-box Cover.*
5. *Pedestal.*
6. *Pedestal Tie-bar.*
7. *Pedestal Stay-rod.*
8. *Pedestal-brace.*

8′. *Pedestal Brace-tie-bar.*

9. *Continuous Truck-frame.*
10. *Wheel-piece.*
11. *Outside Wheel-piece Plate.*
12. *Inside Wheel-piece Plate.*
13. *Wheel-piece Truss-rod.*
14. *Arch-bar.*
15. *Inverted Arch-bar.*
16. *Auxiliary Arch-bar.*
17. *End-piece*, of *Truck-frame.*
18. *Truck-frame King-post.*
19.
20. *Transom.*
21. *Middle-transom*, for *Six-wheeled Truck.*
22. *Outside-transom*, for *Six-wheeled Truck.*
23. *Transom Tie-bar.*
24. *Transom Truss-rod.*
25. *Transom Truss-block.*
26. *Transom-truss-rod Washer.*
27. *Transom Chafing-plate.*
23. *Transom-casting.*
29. *Transom-pillar.*
30. *Truck-bolster.*
31. *Truck-bolster Truss-rod.*
32. *Truck-bolster Truss-block.*
33. *Truck-bolster King-post.*
34. *Truck-bolster Truss-rod Bearing.*
35. *Truck-bolster Truss-rod Washer.*
36. *Truck-bolster Chafing-plate.*
37. *Bolster Guide-bars.*
38. *Bolster Guide-block.*
39. *Truck-frame Queen-posts.*
40. *Lateral Motion Spring.*
41. *Lateral-motion Spring-pin.*
42. *Spring-beam.*
43. *Spring-plank.*
44. *Spring-plank Bearing.*
45. *Spring-plank Safety strap.*
46. *Swing-hangers.*
47. *Upper Swing-hanger Pivot.*
48. *Lower Swing-hanger Pivot.*
49. *Swing-hanger Pivot-bearing.*
50. *Swing-hanger Friction-block.*
51. *Safety-beam.*

52. *Middle Safety-beam.*
53. *Safety-beam Block.*
54. *Axle Safety-bearing.*
55. *Axle Safety-strap.*
56. *Axle Safety-bearing Thimbles.*
57. *Safety-beam Truss-rod.*
58. *Safety-beam Truss-rod Bearing.*
59. *Safety-beam Tie-rod.*
60. *Safety-beam Iron.*
61. *Truck Side-bearing.*
62. *Side-bearing Bridge.*
63. *Truck Centre-plate.*
64. *Centre-plate Block.*
65. *Centre-bearing Beam.*
66. *Centre-bearing Arch-bar.*
67. *Centre-bearing Inverted Arch-bar.*
68. *Check-chain.*
69. *Truck Check-chain Hook.*
70. *Truck Check-chain Eye.*
71. *Equalizing-bar.*
72. *Equalizing-bar Spring-cap.*
73. *Equalizing-bar Spring-seat.*
74. *Bolster Spring-seat.*
75. *Bolster Spring-cap.*
76. *Spring-block.*
77. *Jaw-bit.*
78. *Journal-spring.*
79. *Equalizing-bar Spring.*
80. *Bolster-spring.*
81. *Truck-frame Knee-iron.*
82. *Brake-block.*
83. *Brake-head.*
84. *Brake-beam.*
85. *Brake Eye-bolt.*
86. *Brake-hanger.*
87. *Brake-hanger Carrier.*
88. *Brake Safety-chain.*
89. *Brake Safety-chain Eye-bolt.*
90. *Brake Safety-strap.*
91. *Release-spring.*
92. *Brake-lever.*
93. *Brake-lever Fulcrum.*
94. *Brake-lever Guide.*
95. *Brake-lever Stop.*
96. *Brake-lever Sheave.*
97. *Lower Brake-rod.*
98. *Brake-shoe.*
99. *Journal-box Guides.*
100. *Pedestal-horns.*
101. *Pedestal-jaw.*
102. *Spring-hanger.*
103. *Spring-saddle.*
104. *King-bolt.*
105. *Journal-bearing.*
106. *Journal-bearing Key.*

For list of names of the parts designated by the numbers in the engraving, see page 242.

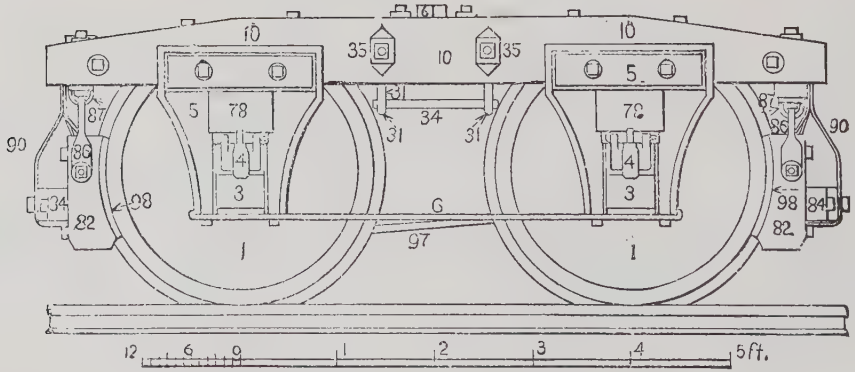


Fig. 88.

WOODEN FREIGHT-CAR TRUCK, NEW YORK & HARLEM RAILROAD.

Side View.

For list of names of the parts designated by the numbers in the engraving, see page 242.

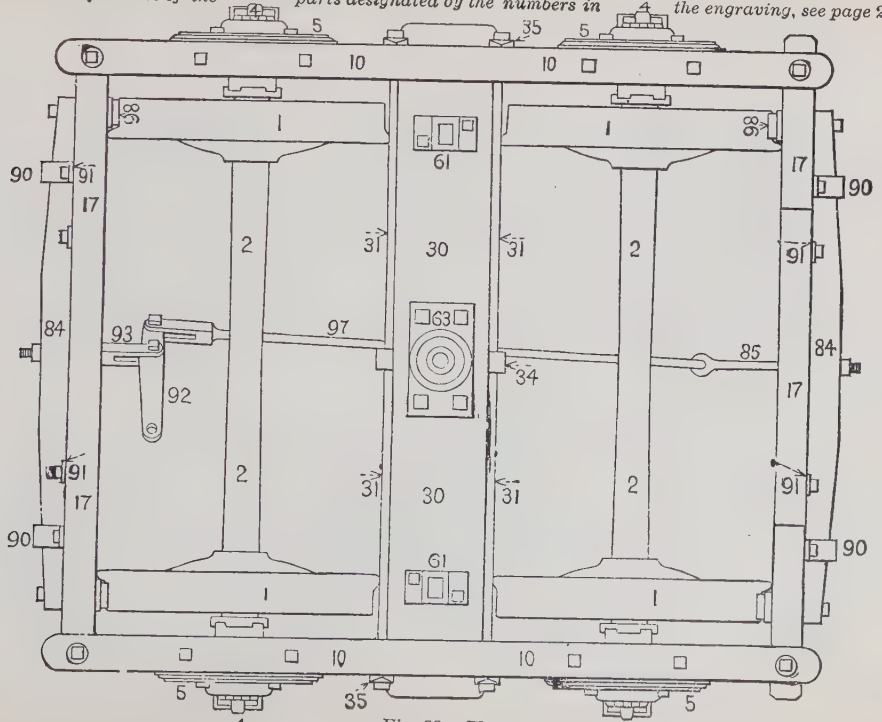


Fig. 89. Plan.

For list of names of the parts designated by the numbers in the engraving, see page 242.

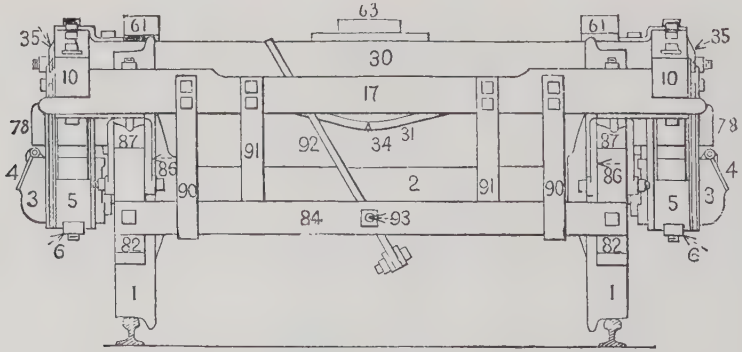


Fig. 90.

WOODEN FREIGHT-CAR TRUCK, NEW YORK & HARLEM RAILROAD.

End View.

For list of names of the parts designated by the numbers in the engravings, see page 242.

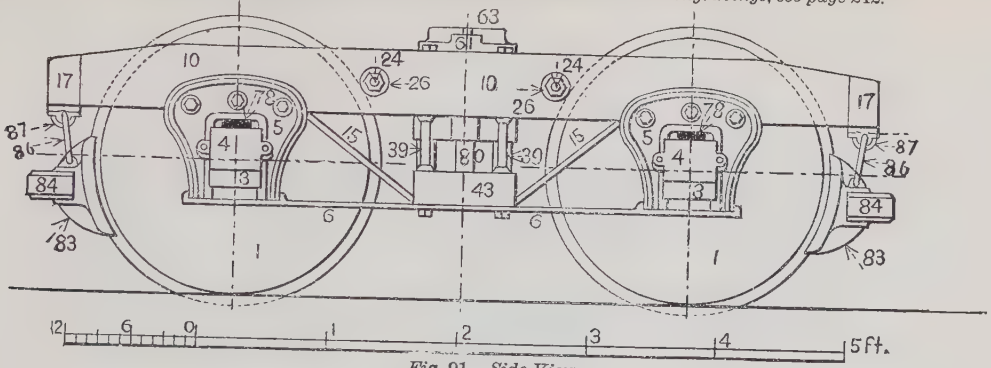


Fig. 91. Side View.

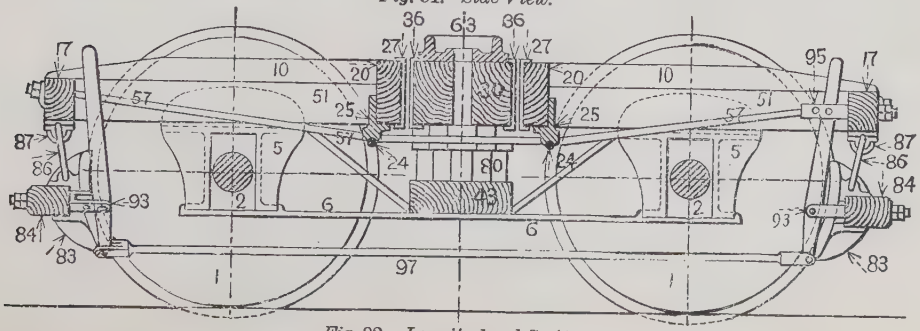


Fig. 92. Longitudinal Section.

WOODEN FREIGHT-CAR TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engraving, see page 242.

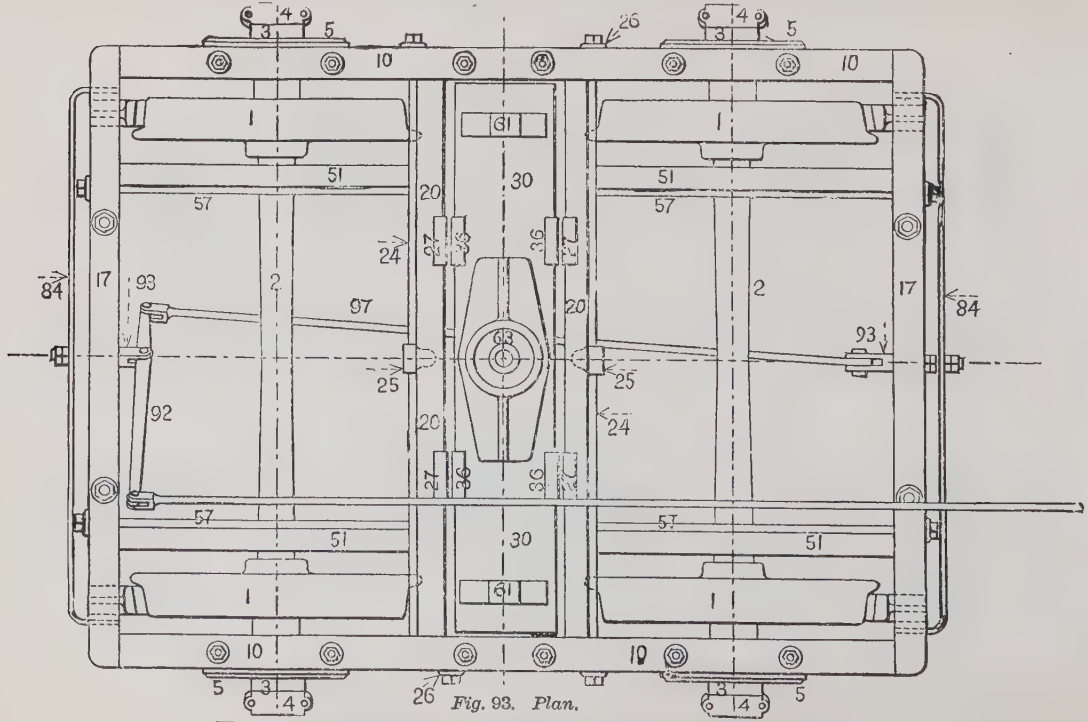
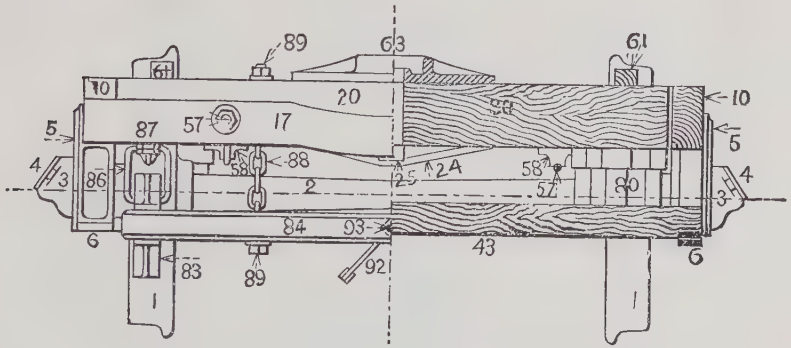


Fig. 93. Plan.

WOODEN FREIGHT-CAR TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engraving, see page 242.



End View. *Fig. 94.* *Transverse Section.*

WOODEN FREIGHT-CAR TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engravings, see page 242.

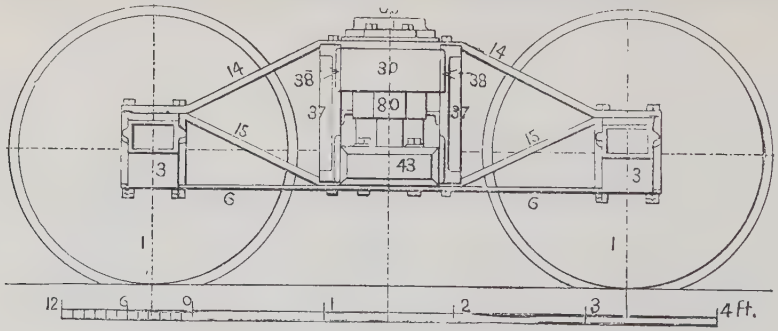


Fig. 95. Side View.

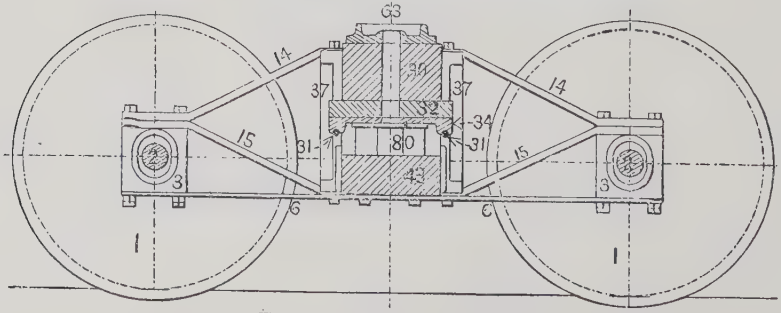


Fig. 96. Longitudinal Section.

DIAMOND-TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engraving, see page 242.

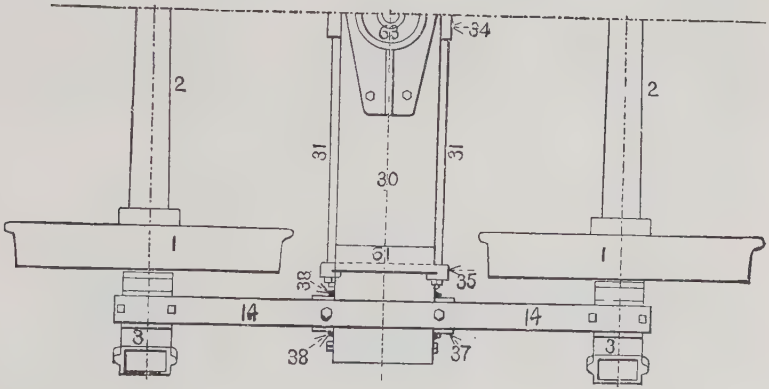
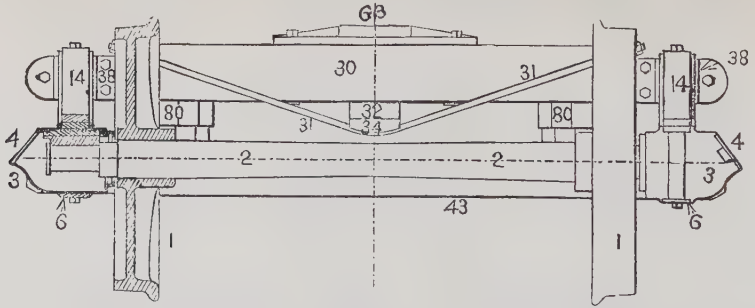


Fig. 97.

DIAMOND-TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

Half Plan.

For list of names of the parts designated by the numbers in the engravings, see page 242.



Section through Axle. *Fig. 98.* *End View.*

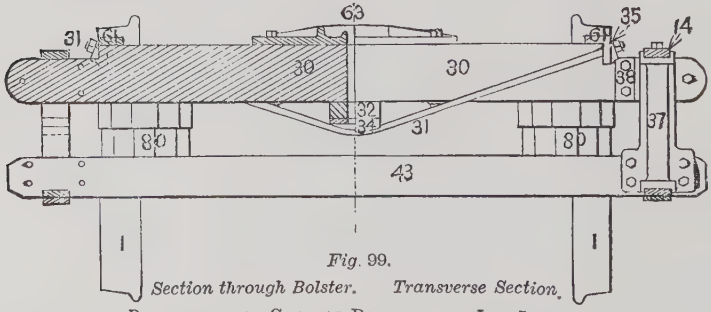


Fig. 99.

Section through Bolster. *Transverse Section.*

DIAMOND-TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engravings, see page 242

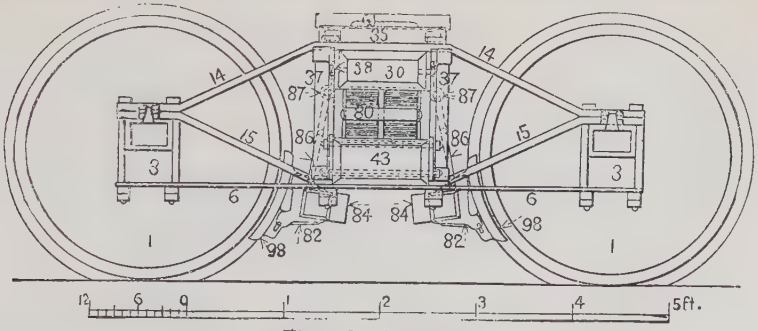


Fig. 100. *Side View.*

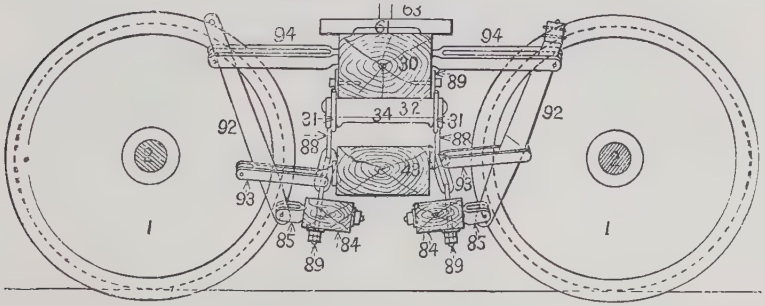


Fig. 101. *Longitudinal Section.*
DIAMOND-TRUCK, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 242.

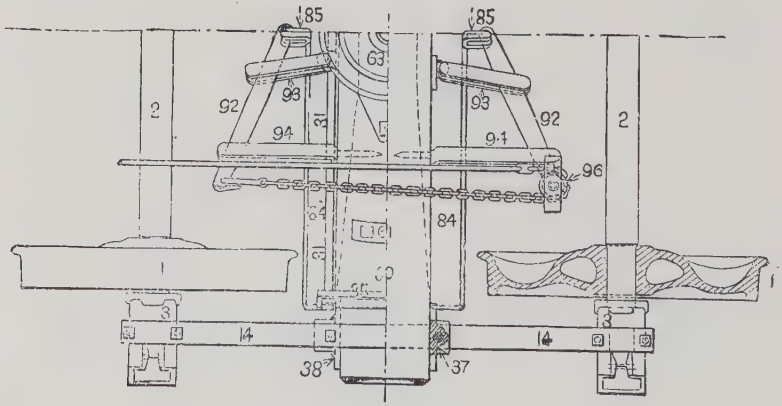


Fig. 102.

DIAMOND-TRUCK, PENNSYLVANIA RAILROAD.

Half Plan.

For list of names of the parts designated by the numbers in the engravings, see page 242.

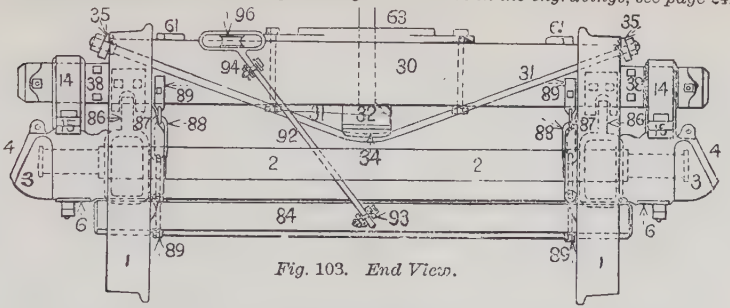


Fig. 103. *End View.*

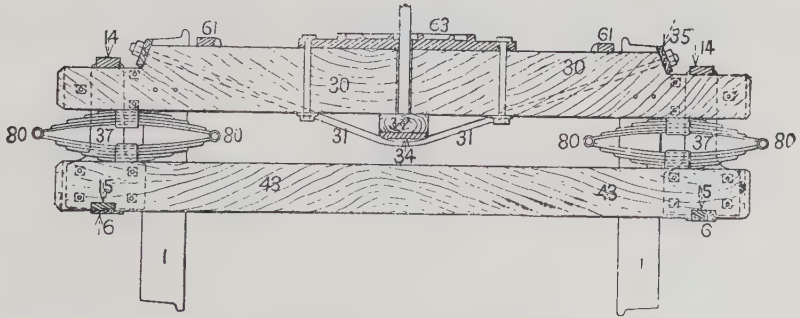


Fig. 104. *Transverse Section.*
DIAMOND-TRUCK, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 242.

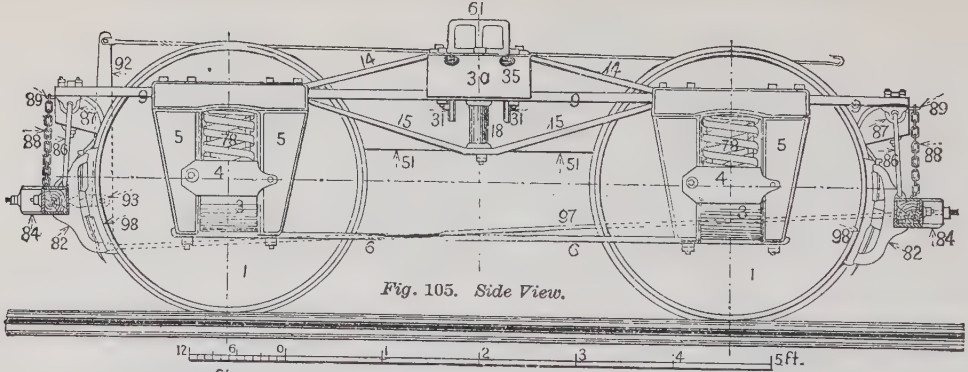


Fig. 105. *Side View.*

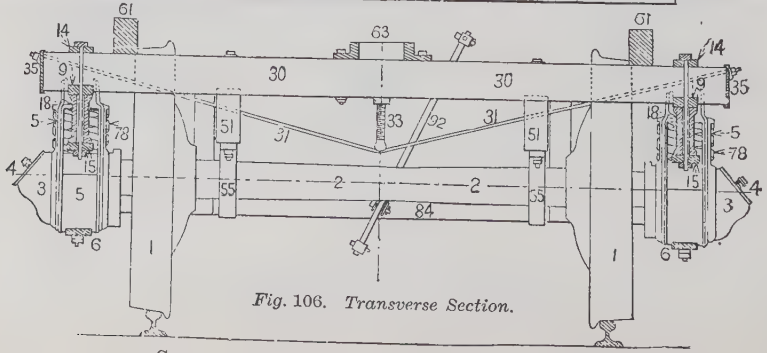


Fig. 106. *Transverse Section.*

CONTINUOUS-FRAME TRUCK, BOSTON & ALBANY RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see *page 24*[illegible].

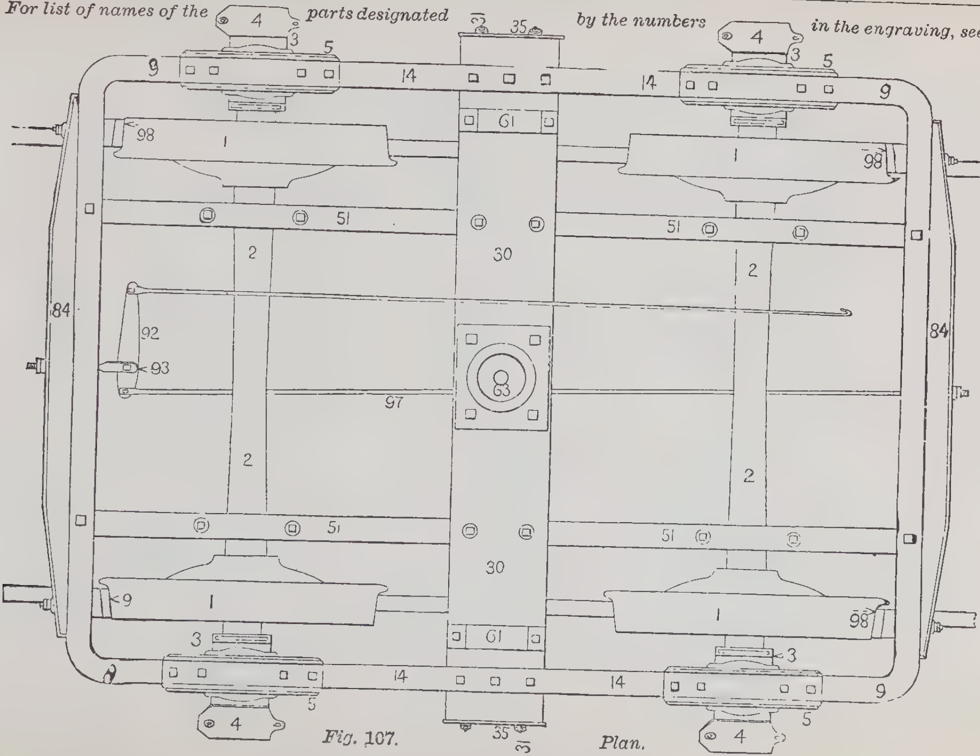
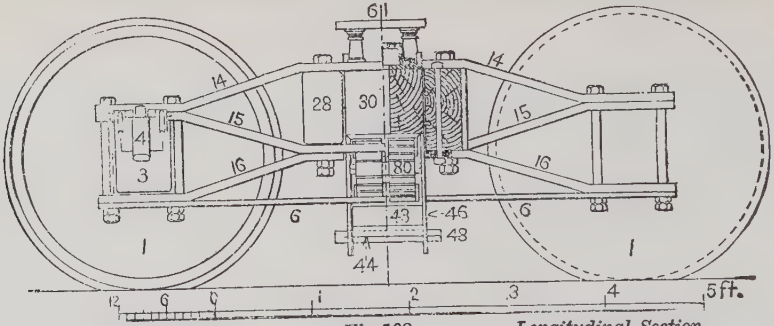


Fig. 107. *Plan.*

CONTINUOUS-FRAME TRUCK, BOSTON & A

For list of names of the parts designated by the numbers in the engravings, see page 242.



Side View. *Fig. 108.* *Longitudinal Section.*

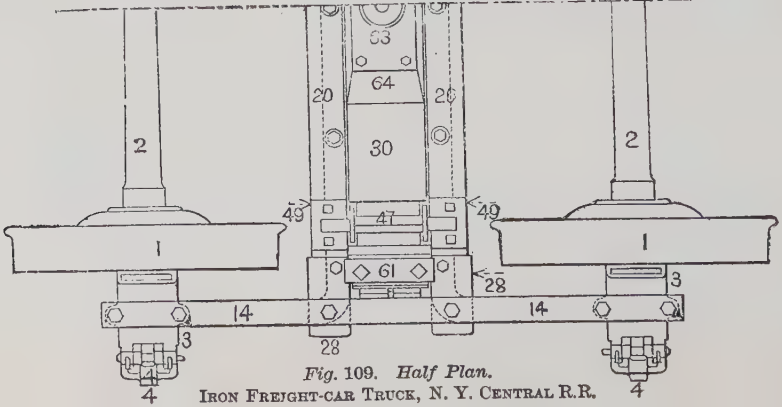
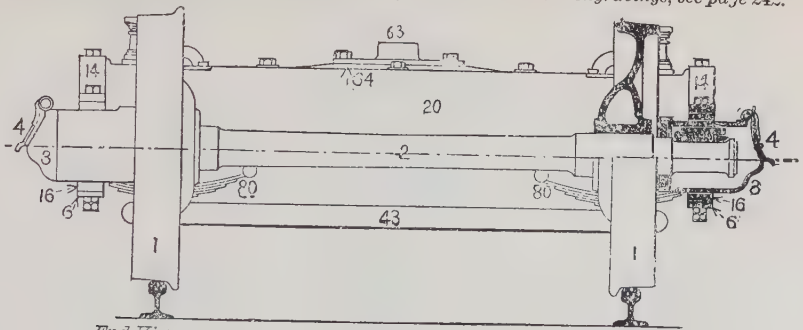


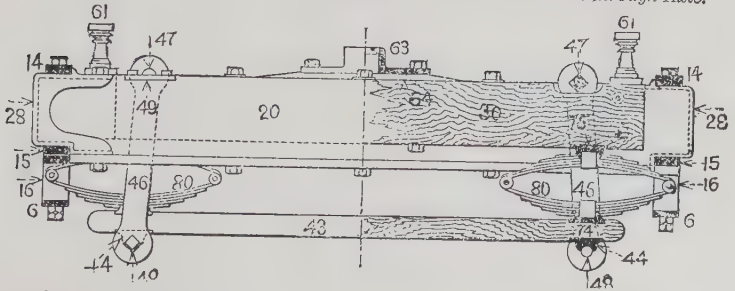
Fig. 109. Half Plan.

IRON FREIGHT-CAR TRUCK, N. Y. CENTRAL R.R.

For list of names of the parts designated by the numbers in the engravings, see page 242.



End View. *Fig. 110.* *Section through Axle.*



Transverse Section. *Fig. 111.* *Section through Bolster.*

IRON FREIGHT-CAR TRUCK, NEW YORK CENTRAL RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 242.

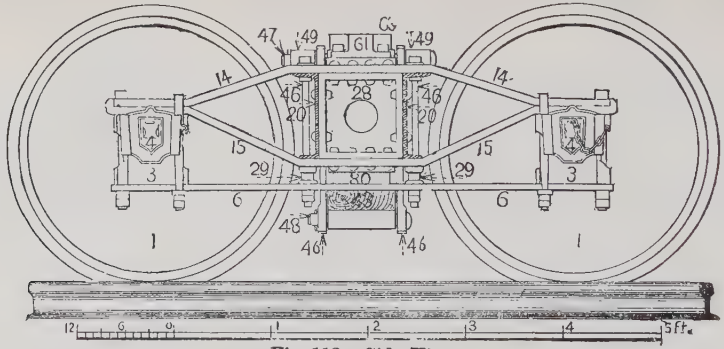


Fig. 112. *Side View.*

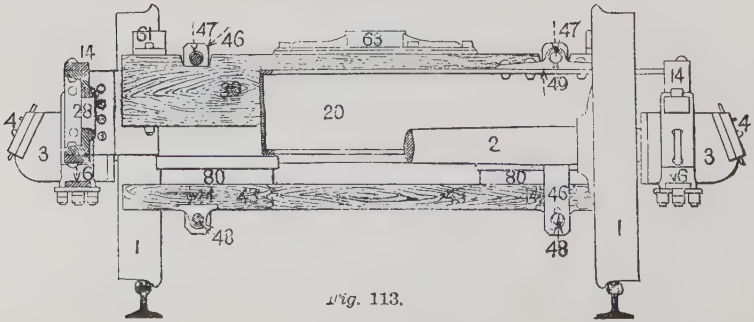


Fig. 113.

Transverse Section. THIELSEN'S TRUCK. *End View.*

For list of names of the parts designated by the numbers in the engraving, see page 242.

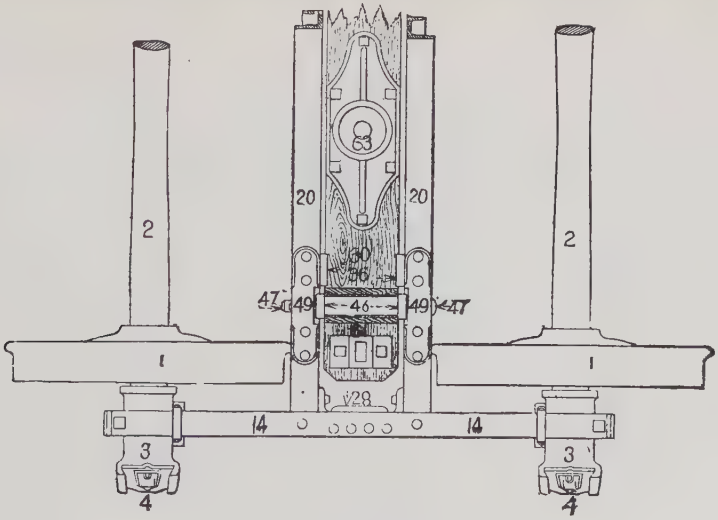
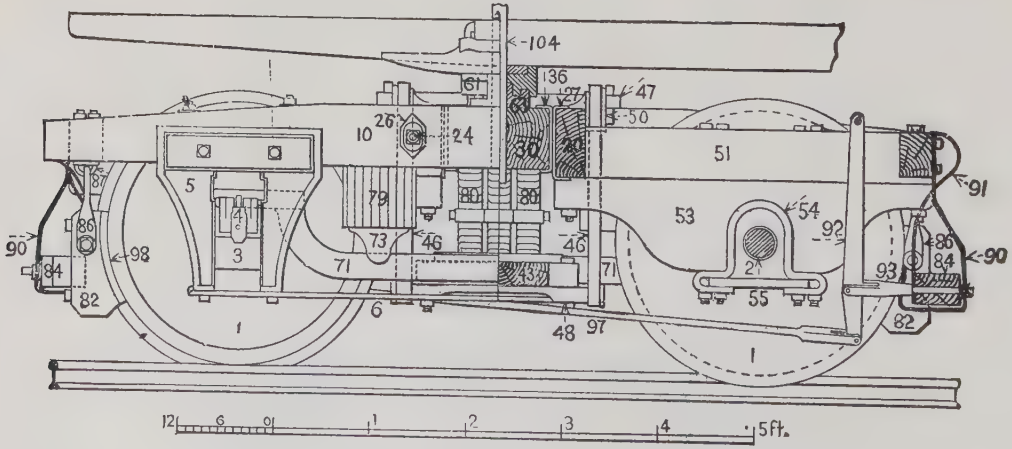


Fig. 114.
THIELSEN'S TRUCK.
Half Plan.

For list of names of the parts designated by the numbers in the engraving, see page 242.



Side View. *Fig.* 115. *Longitudinal Section.*

PASSENGER-CAR TRUCK, NEW YORK & HARLEM RAILROAD.

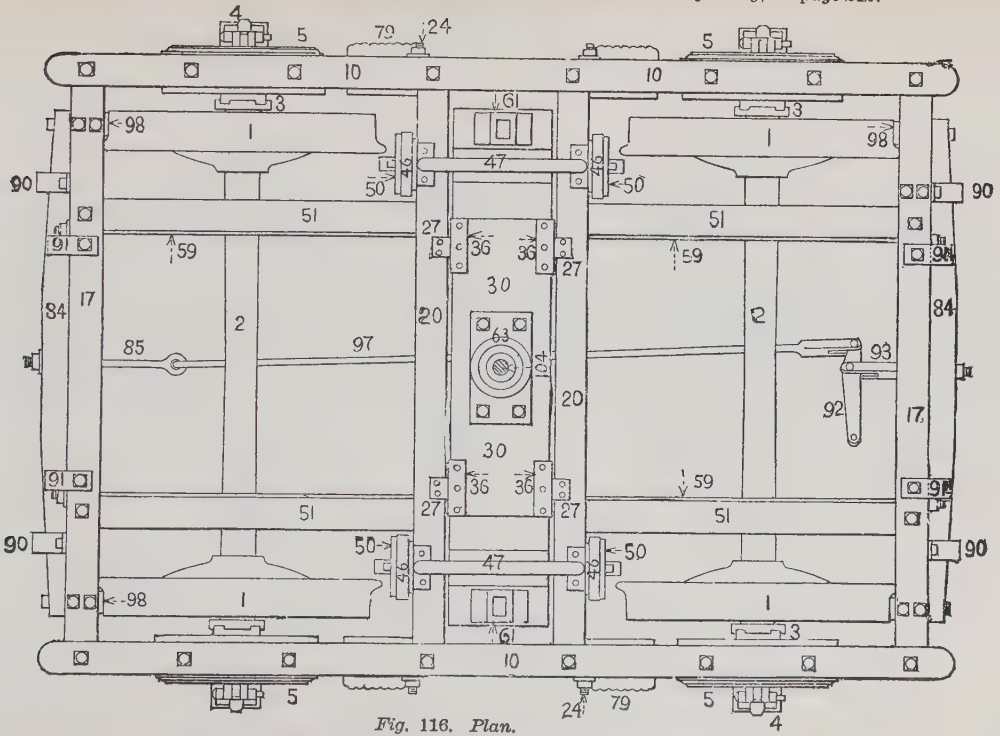


Fig. 116. Plan.

PASSENGER-CAR TRUCK, NEW YORK & HARLEM RAILROAD.

For list of names of the parts designated by the numbers in the engraving see page 242.

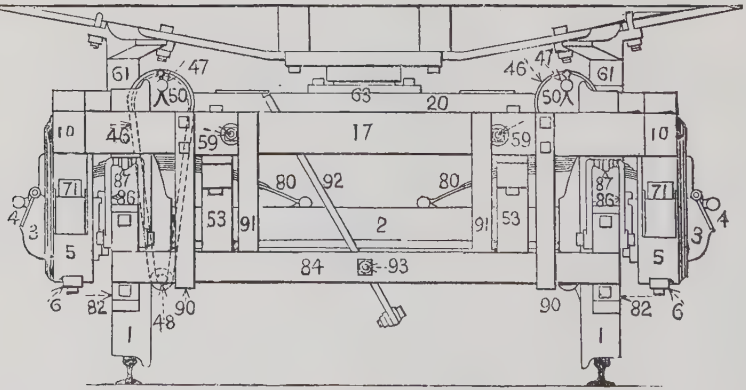
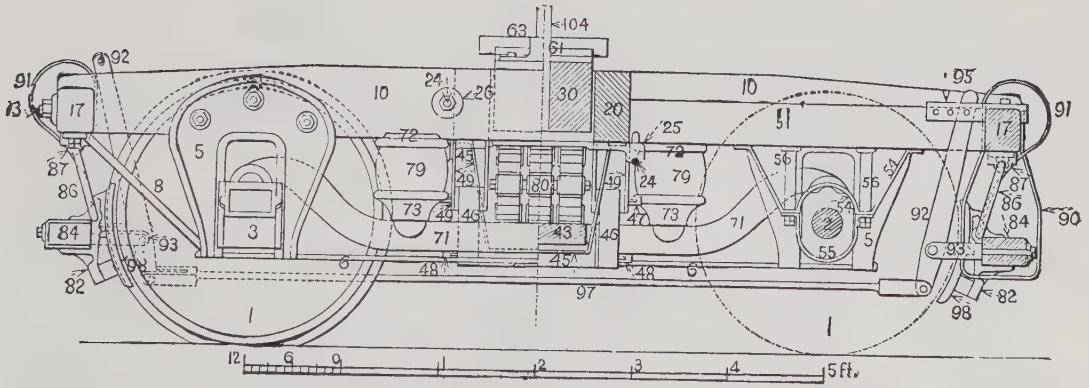


Fig. 117.

PASSENGER-CAR TRUCK, NEW YORK & HARLEM RAILROAD.

End View.

For list of names of the parts designated by the numbers in the engraving, see page 242.



Side View. *Fig.* 118. *Longitudinal Section.*

PASSENGER-CAR TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engraving, see page 241.

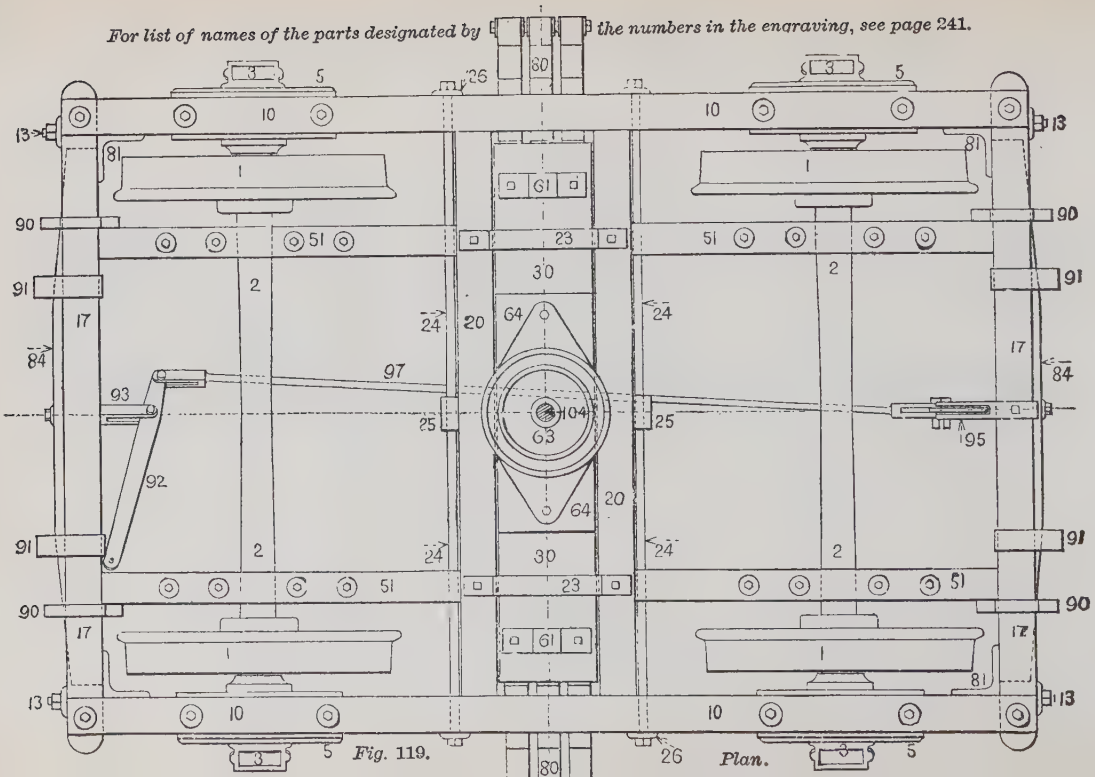


Fig. 119.

For list of names of the parts designated by the numbers in the engravings, see page 242.

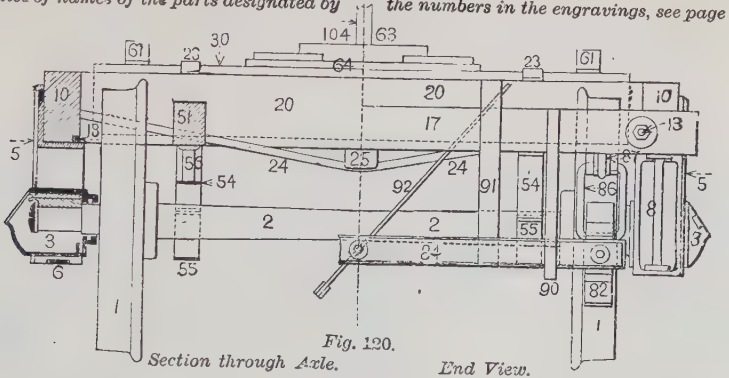


Fig. 120.

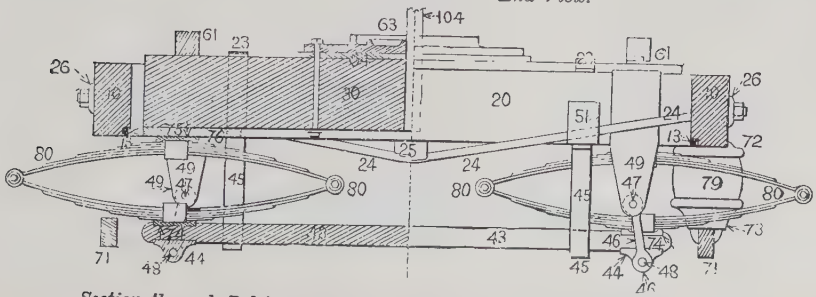


Fig. 121.

PASSENGER-CAR TRUCK, CENTRAL RAILROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engraving, see page 242.

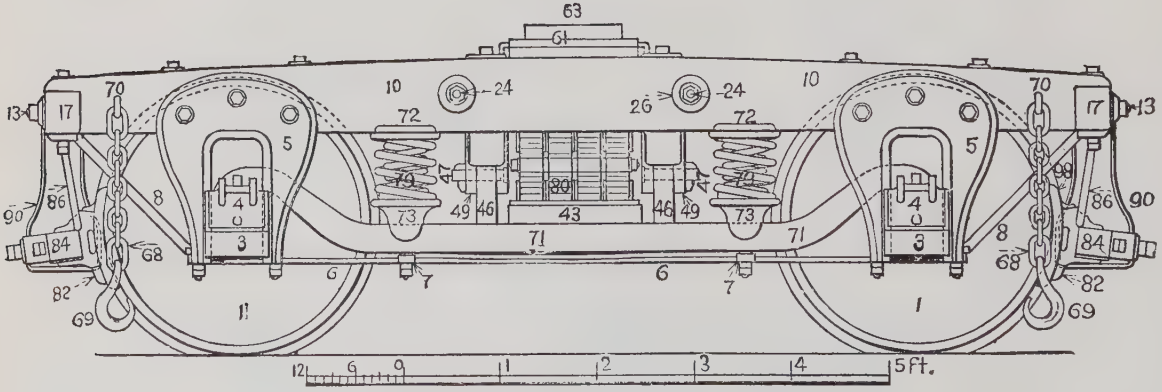


Fig. 122.

PASSENGER-CAR TRUCK, PENNSYLVANIA RAILROAD.

Side View.

For list of names of the parts designated by the numbers in the engraving, see page 242.

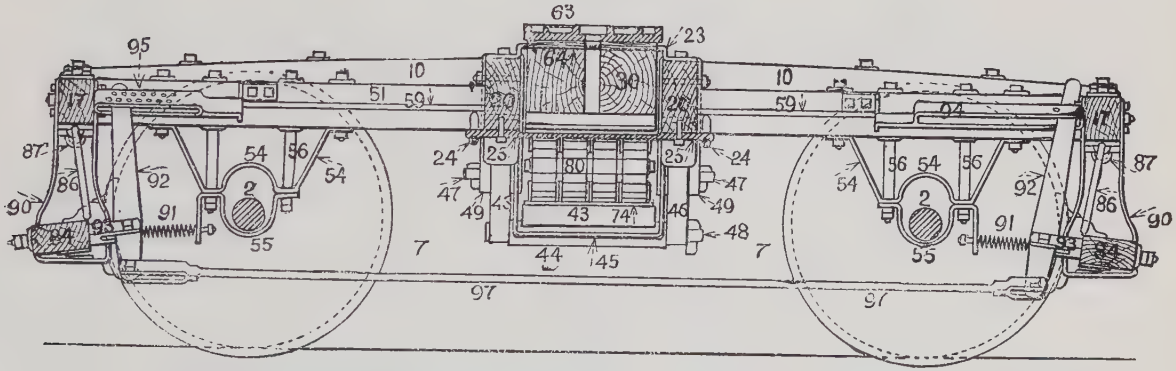


Fig. 123.

Passenger-car Truck, Pennsylvania Railroad.

Longitudinal Section.

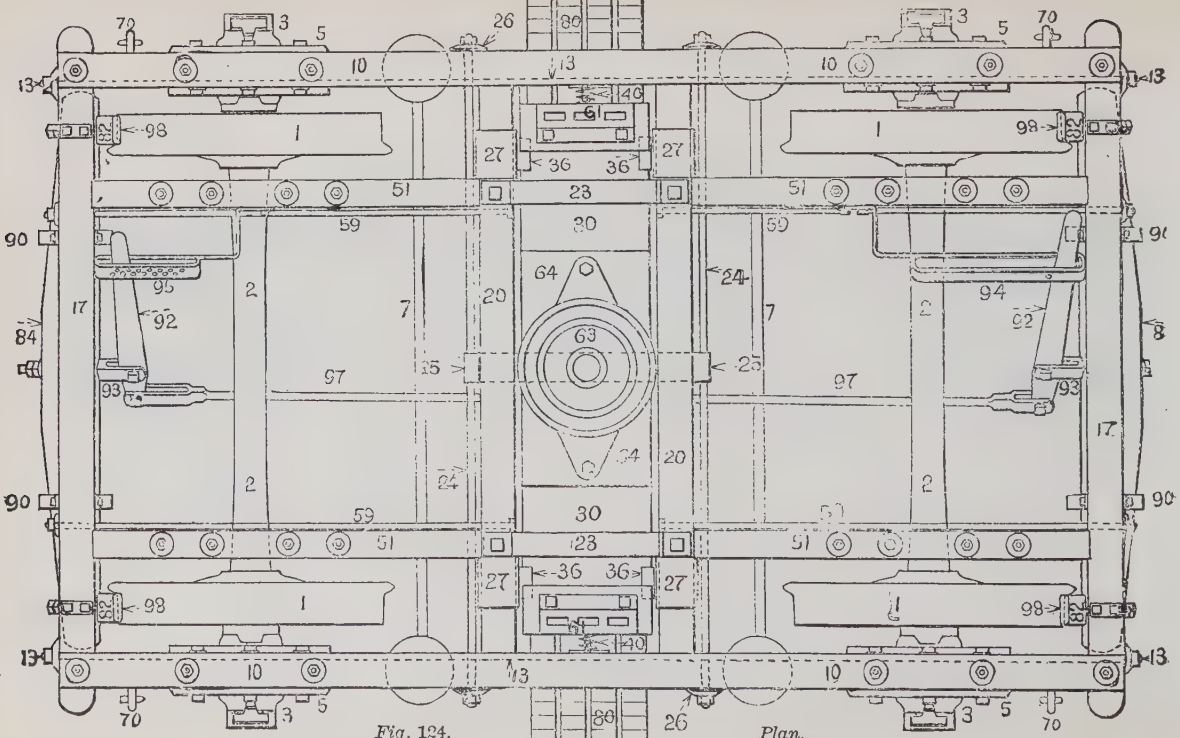


Fig. 124. *Plan.*

PASSENGER-CAR TRUCK, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 242.

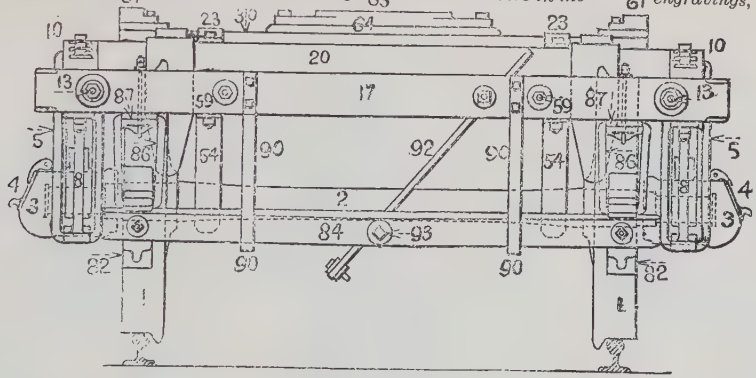
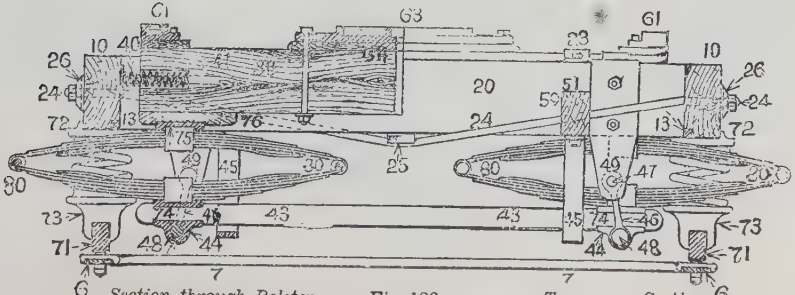


Fig. 125. End View.



Section through Bolster. *Fig. 126.* *Transverse Section.*

PASSENGER-CAR TRUCK, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 242.

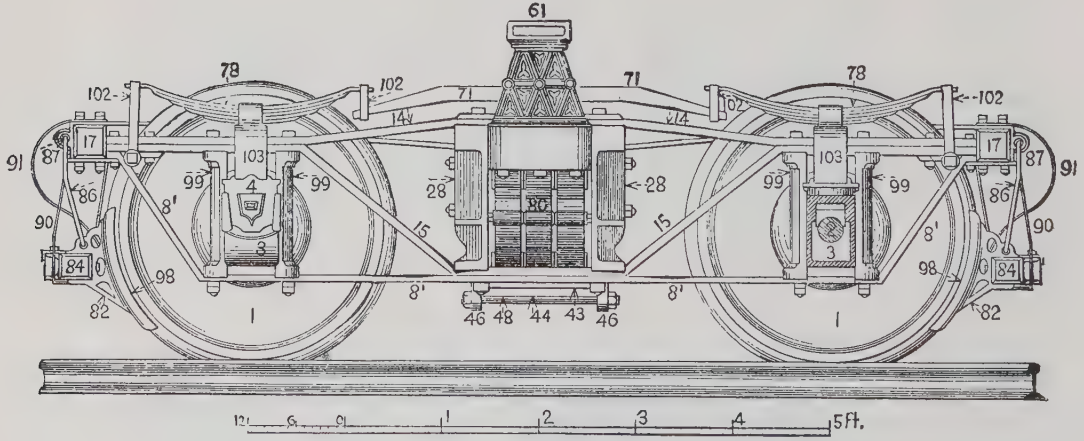


Fig. 127.

ALLEN IRON PASSENGER-CAR TRUCK, CHICAGO, BURLINGTON & QUINCY RAILROAD.

Side View.

For list of names of the parts designated by the numbers in the engraving, see page 242.

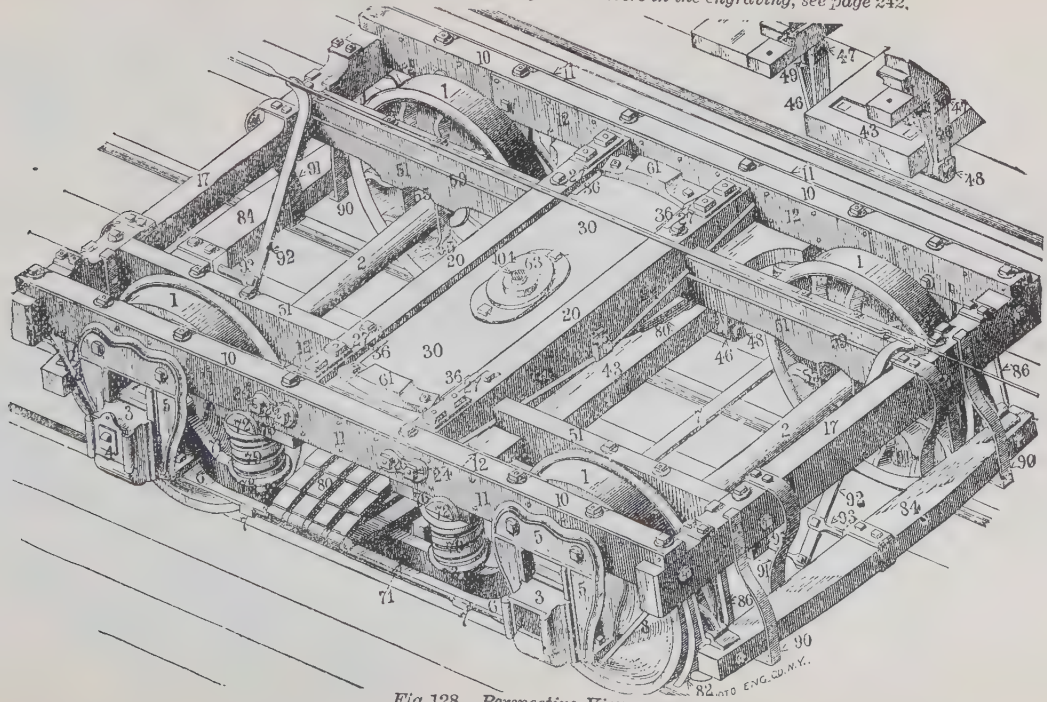
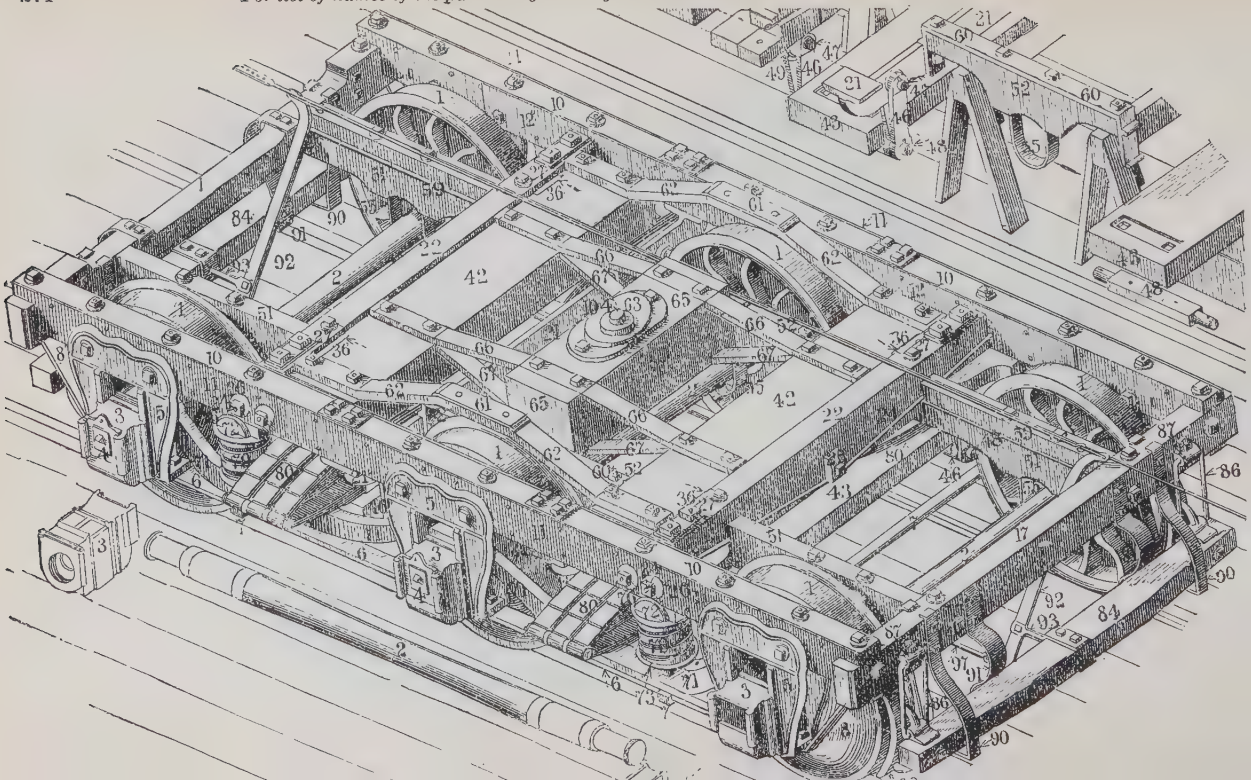


Fig 128. Perspective View.

PASSENGER-CAR TRUCK, PULLMAN'S PALACE CAR COMPANY.

For list of names of the parts designated by the numbers in the engraving, see page 242.



For list of names of the parts designated by the numbers in the engraving, see page 242.

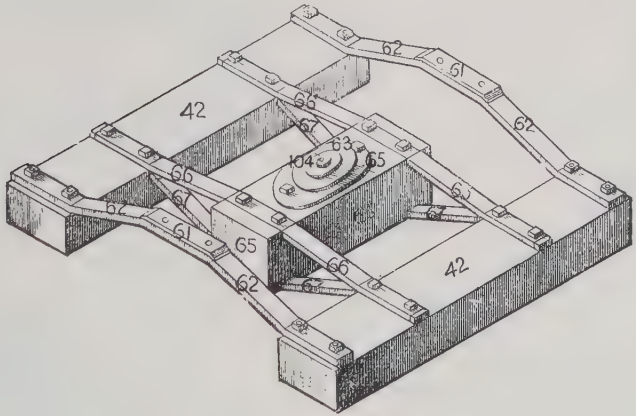


Fig. 130.

BOLSTER FOR SIX-WHEELED TRUCK.

Perspective View.

For list of names of the parts designated by the numbers in fig. 131, see page 242.

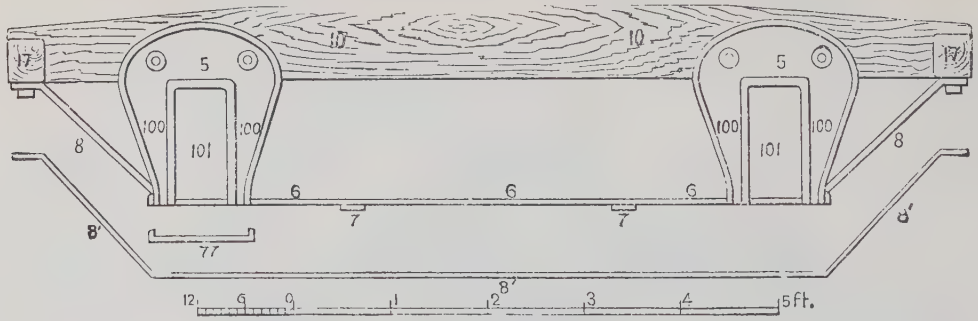


Fig. 131. *Side View.*
SIDE-FRAME OF WOODEN CAR-TRUCK.

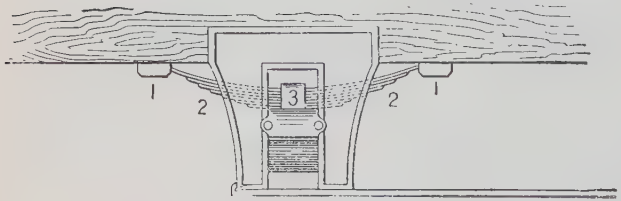


Fig. 132. *Side View.*
PEDESTAL, WITH HALF-ELLIPTIC JOURNAL-SPRING.
1. *Half-elliptic Spring-bearing.*
2. *Half-elliptic Spring.*
3. *Spring-band.*

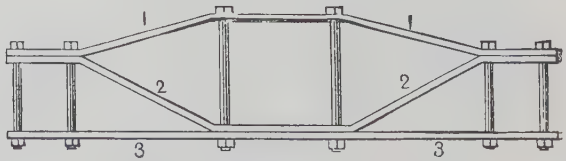


Fig. 133. *Side View.*
SIDE-FRAME OF DIAMOND-TRUCK.
1. *Arch-bar.*
2. *Inverted Arch-bar.*
3. *Pedestal Tie-bar.*

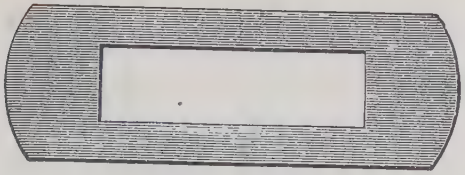


Fig. 134.
FRAMED SPRING-PLANK.
Plan.

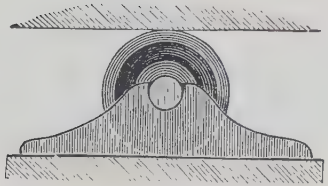


Fig. 135.
ROLLER SIDE-BEARING.
Side View.

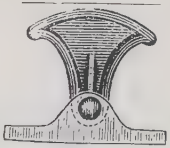


Fig. 136.
ROCKER SIDE-BEARING.

Fig. 137.
OPEN SWING-HANGER, OR SWING LINK-HANGER.

WHEELS, AXLES, JOURNAL-BOXES, ETC.

LIST OF NAMES OF THE PARTS OF WHEELS, AXLES, JOURNAL-BOXES, ETC., WHICH ARE DESIGNATED BY THE LETTERS AND NUMBERS IN FIGS. 138–153.

A. *Centre, of Axle.*
B. *Neck, of Axle.*
C. *Wheel-seat.*
D. *Dust-guard Bearing.*
E. *Journal.*
F. *Axle-collar.*
3. *Stop-plate.*
7. *Journal-bearing.*
8. *Journal-bearing Key.*
9. *Stop-key Journal-bearing.*
10. *Journal-box.*
11. *Journal-box Cover.*
12. *Journal-box-cover Hinge-pin.*
13. *Journal-box-cover Spring.*
14. *Journal-packing.*
15. *Dust-guard and Dust-guard Chamber.*
16. *Dust-collar.*
17. *Equalizing-bar Seat.*
18. *Pedestal.*
19. *Pedestal-horns.*
20. *Pedestal-jaw.*
21. *Hub, of Wheel.*
22. *Wheel-plate.*
23. *Rim, of Wheel.*
24. *Face, of Rim.*
25. *Tread of Wheel, or Wheel-tread.*
26. *Wheel-flange.*
27. *Journal-bearing Stop-key.*
28. *Oil-cellar.*
29. *Stop Journal-bearing.*

For list of names of the parts designated by the numbers in the engravings, see page 278.

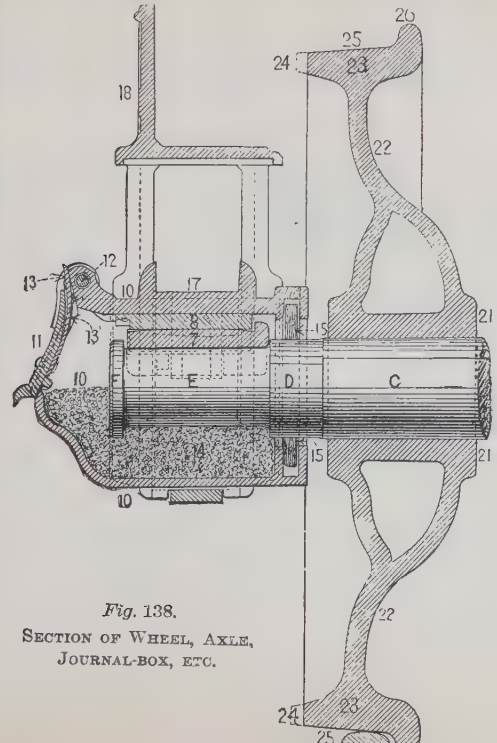


Fig. 138.
SECTION OF WHEEL, AXLE, JOURNAL-BOX, ETC.

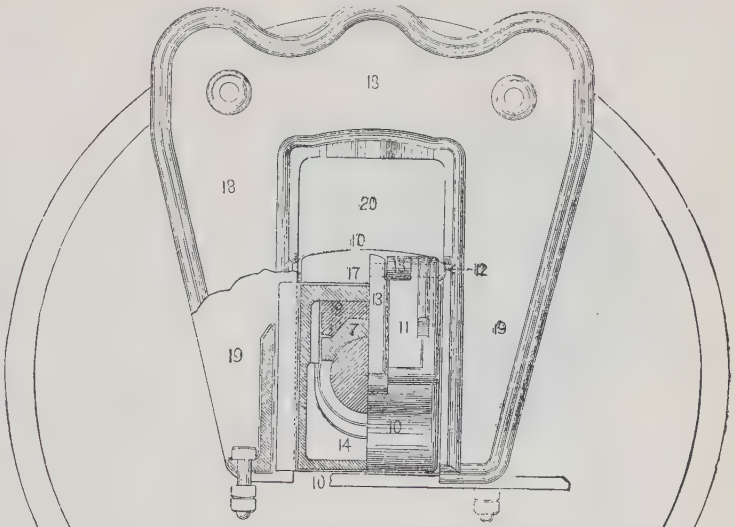


Fig. 139.
Section through Journal. *Front View.*
WHEEL, AXLE, JOURNAL-BOX, ETC.

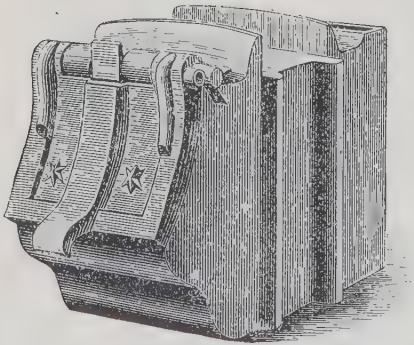


Fig. 140.
JOURNAL-BOX.
Perspective View

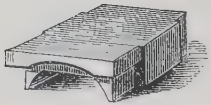


Fig. 142.
JOURNAL-BEARING KEY.

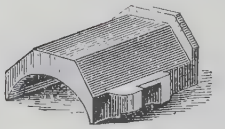


Fig. 141.
JOURNAL-BEARING.

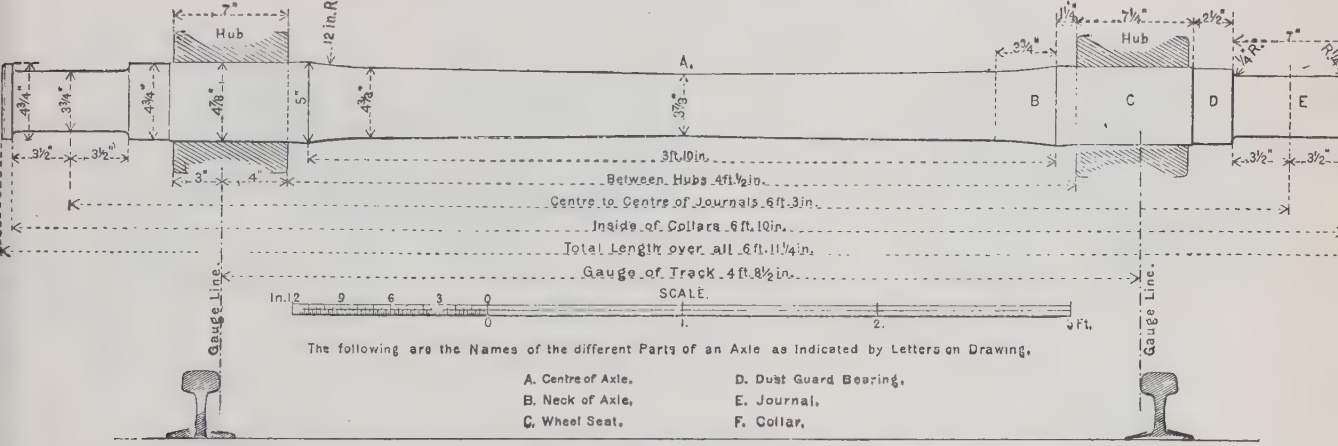
"The engraving herewith of the Standard Car and Tender Axle, recommended by the Master Car-Builders' and Master Mechanics' associations, at their conventions, held in 1879, is hereby approved."

Committee of Master Car-Builders' Association.

F. D. ADAMS, Boston & Albany Railroad.
M. N. FORNEY, *Railroad Gazette.*
JOHN KIRBY, Lake Shore & Mich. South. Ry.
S. A. DAVIS, Boston, Lowell & Nashua Railroad.

H. W. COOPER, Ind., Bloomington & West. Ry.
J. M. BOON, Pittsburgh, Fort Wayne & Chicago Ry.
W. S. HUDSON, Rogers Locomotive Works.
M. N. FORNEY, *Railroad Gazette.*

Committee of Ma Mechanics' Associat



The following are the Names of the different Parts of an Axle as Indicated by Letters on Drawing.

A. Centre of Axle.
B. Neck of Axle.
C. Wheel Seat.
D. Dust Guard Bearing.
E. Journal.
F. Collar.

The engraving represents the dimensions of the axle when finished. Weight, finished, 347 lbs.

Fig. 143.

MASTER CAR-BUILDERS' STANDARD AXLE.

For list of names of the parts designated by the letters and numbers in the engravings, see page 278.

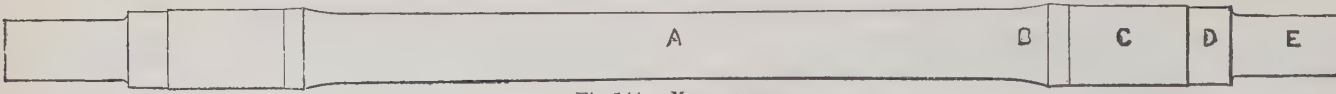


Fig. 144. MULEY-AXLE.

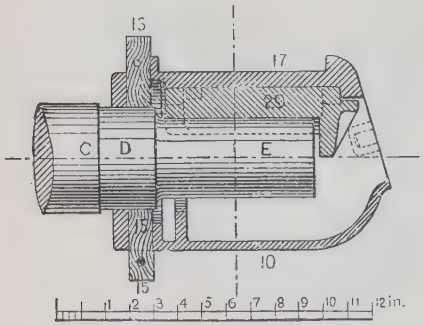


Fig. 145. *Section.*
WRIGHT'S STOP JOURNAL-BEARING.

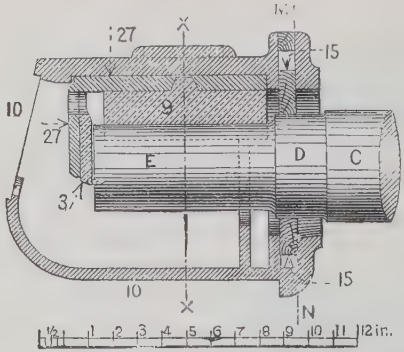


Fig. 146. *Section.*

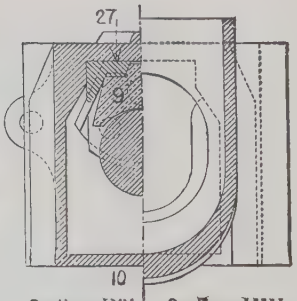


Fig. 147.
BISSEL'S STOP-KEY JOURNAL-BEARING.

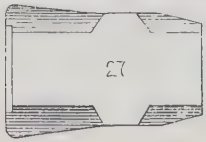


Fig. 150. *Plan.*

Fig. 148. *Side View.*
BISSEL'S JOURNAL-BEARING STOP-KEY.

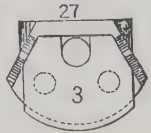


Fig. 149. *Back End View.*

For list of names of the parts designated by the numbers in the engravings, see page 278.

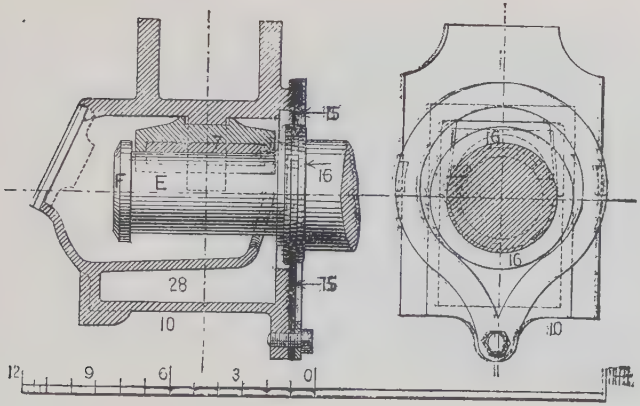


Fig. 151. *Section.*

Fig. 152. *Back View.*

TIM'S JOURNAL-BOX.

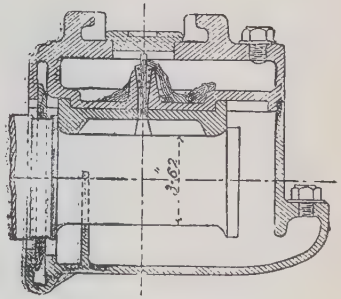


Fig. 153. *Section.*

TOP-RESERVOIR JOURNAL-BOX.

Fig. 154.
Front View.

Fig. 155.
Back View.

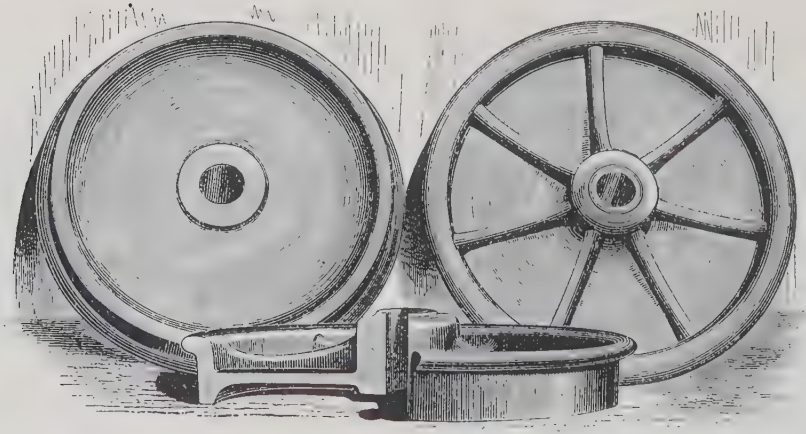


Fig. 156.

SINGLE-PLATE WHEEL.

Fig. 157.
Section.

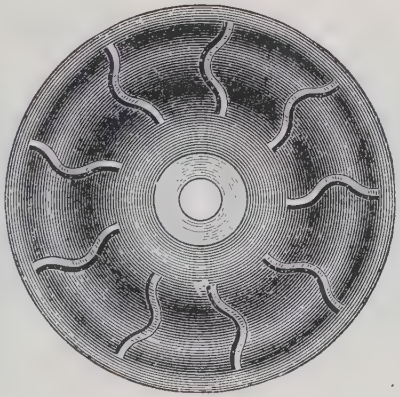


Fig. 158.
Back View

SINGLE-PLATE WHEEL.

Fig. 159.
Section.

"COMBINATION" PLATE-WHEEL.

Fig. 161.
Section.

Fig. 162.
Back View.

"WASHBURN"-WHEEL.

Fig. 163.
Section.

Fig. 164.
Back View.

DOUBLE-PLATE WHEEL.

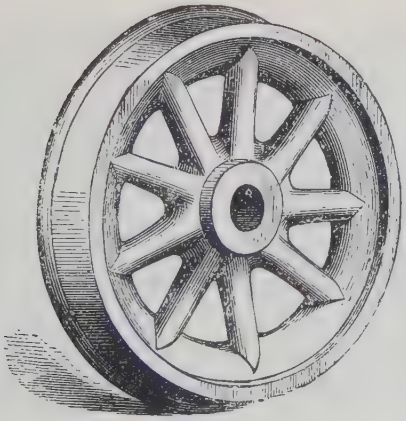


Fig. 165.
Front View.
SPOKE-WHEEL.

Fig. 166.
Section.

Fig. 167.
Front View.

HOLLOW-SPOKE WHEEL.

Fig. 168.
Front View.

Fig. 169.
Section.

ELASTIC-WHEEL.

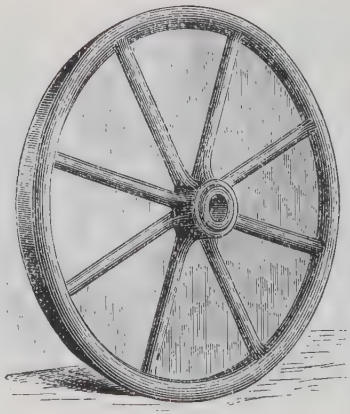


Fig. 170.
Back View.

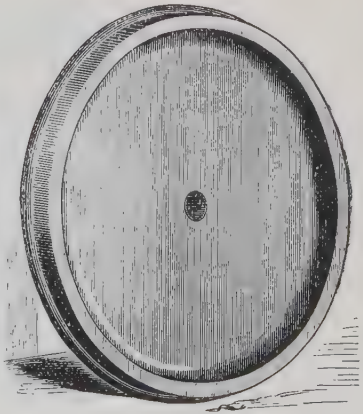


Fig. 171.
Front View.

SINGLE-PLATE WHEEL FOR STREET-CARS.

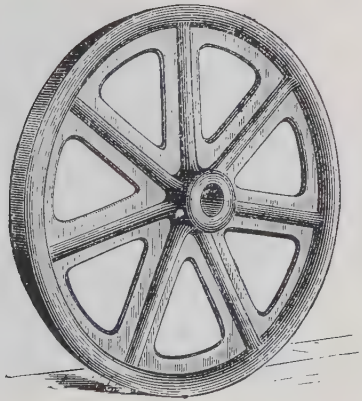


Fig. 172.
Back View.

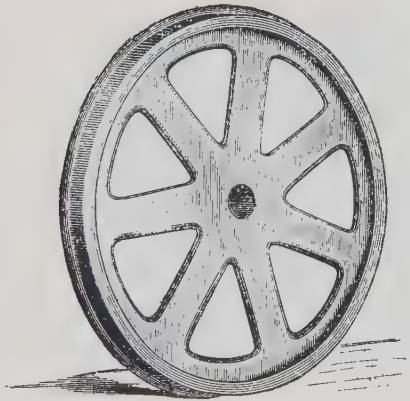


Fig. 173.
Front View.

OPEN PLATE-WHEEL, FOR STREET-CARS.

Fig. 174.
Section.

Fig. 175.
Front View.

SAX & KEAR WHEEL.

Fig. 176.
Section.

Fig 177.
Front View.

PAPER-WHEEL.

2. *Tire-bolt.*
3. *Hub-bolt.*
5. *Tire*
6. *Compressed-paper.*

Fig. 178.
Section.

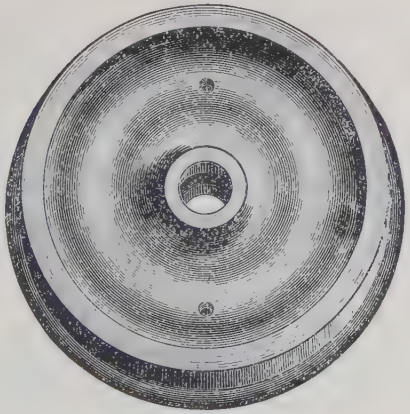


Fig. 179.
Front View.

SOLID STEEL-WHEEL.

Fig. 180.
Section.

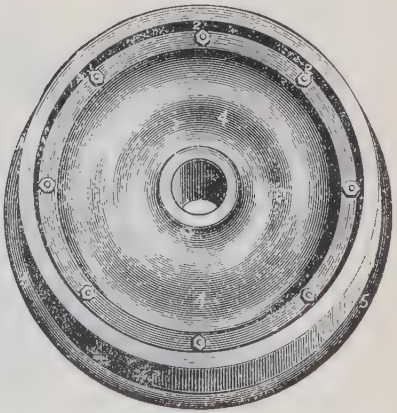


Fig. 181.
Front View.

STEEL-WHEEL WITH TIRE AND RETAINING-RINGS.

1. *Retaining-ring.*
2. *Tire-bolt.*
4. *Wheel-centre.*
5. *Tire.*

Fig. 182.
Section.

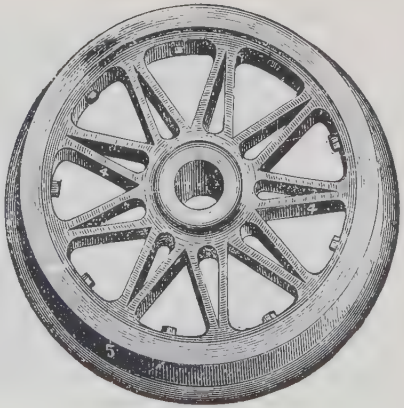


Fig. 183.
Front View.

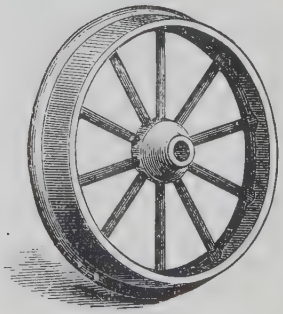


Fig. 184.
HAND-CAR WHEEL.

WROUGHT-IRON WHEEL WITH TIRE.

2. *Tire-bolt*
4 *Wheel-centre.*
5. *Tire.*

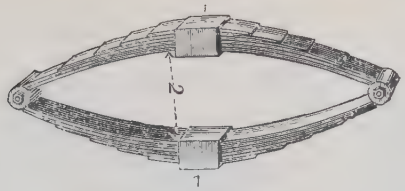


Fig. 185.
ELLIPTIC-SPRING.

Fig. 187.
HALF ELLIPTIC-SPRING.

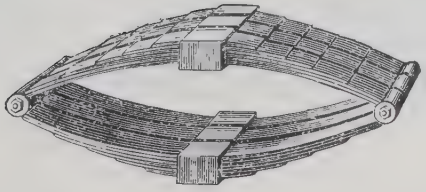


Fig. 186.
TRIPLET OF ELLIPTIC-SPRINGS.

Fig. 188.
COMBINATION ELLIPTIC-SPRING.

1. *Spring-band.*
2. Set of Spring.

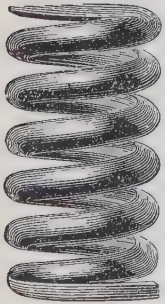


Fig. 189.
ROUND-BAR SPIRAL SINGLE-COIL SPRING.

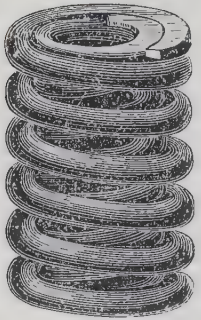


Fig. 190.
ROUND-BAR SPIRAL DOUBLE-COIL NEST-SPRING.

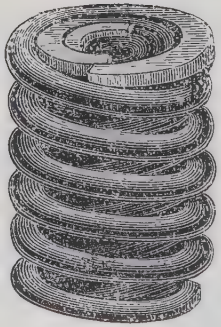


Fig. 191.
ROUND-BAR SPIRAL TRIPLE-COIL NEST-SPRING.

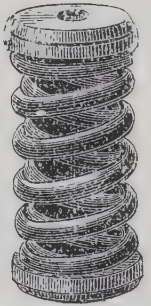


Fig. 192.

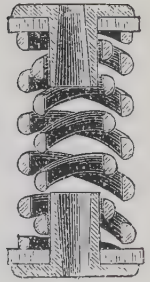


Fig. 193. *Section.*
HALF-ROUND-BAR SPIRAL DOUBLE-COIL NEST-SPRING.

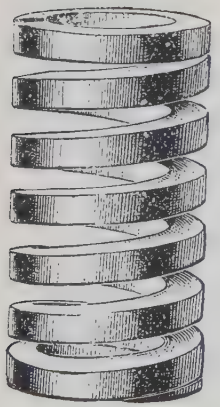


Fig. 194.
SQUARE-BAR SPIRAL SINGLE-COIL SPRING.

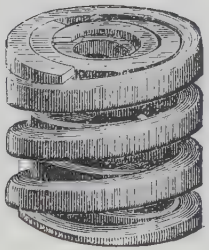


Fig. 195.
SQUARE-BAR SPIRAL TRIPLE-COIL NEST-SPRING.

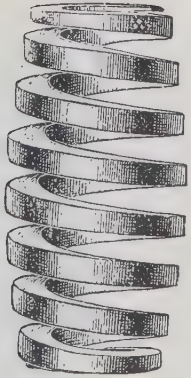


Fig. 196.
KEG-SHAPED SPIRAL-SPRING.

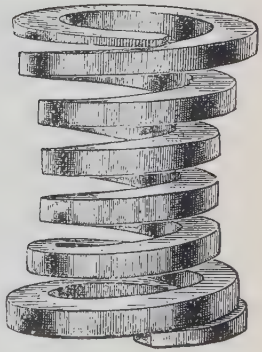


Fig. 197.
SPOOL-SHAPED SPIRAL-SPRING.

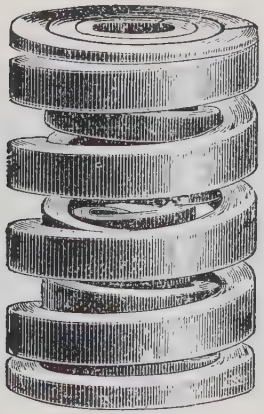


Fig. 198.
FLAT-BAR OR EQUAL-BAR
SPIRAL TRIPLE-COIL NEST-SPRING.

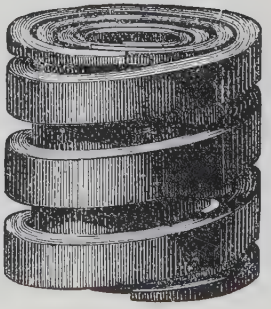


Fig. 199.
"HIBBARD" OR FLAT-BAR
SPIRAL QUADRUPLE-COIL NEST-SPRING.

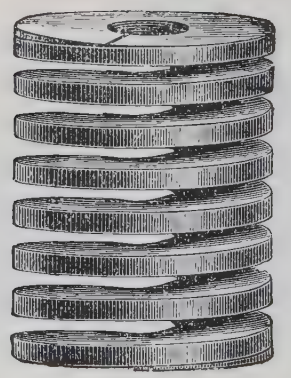


Fig. 200.
EDGE-ROLLED SPIRAL-SPRING.

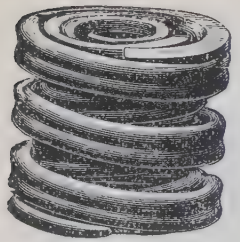


Fig. 201.
"DINSMORE" SPIRAL-SPRING.

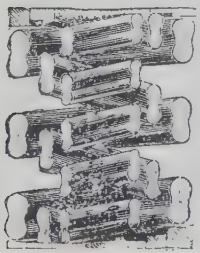


***Fig.* 202.**
SECTION OF "DINSMORE" SPIRAL-SPRING.

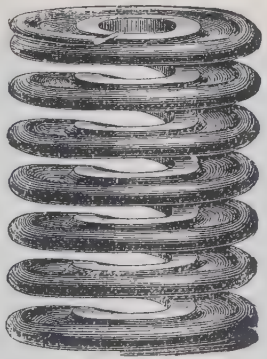


***Fig.* 203.**
"PARAGON" SPIRAL-SPRING.

Fig. 204.
SECTION OF BAR OF "PARAGON" SPIRAL-SPRING.

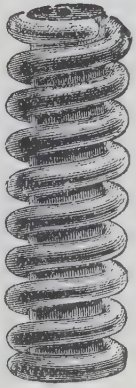


Fig. 205.
SMALL RUBBER-CENTRE SPIRAL-SPRING.

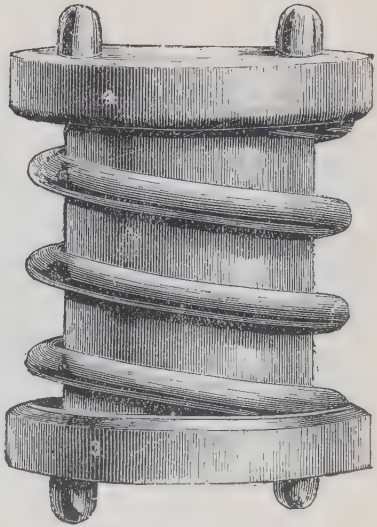


Fig. 206.
RUBBER-CENTRE SPIRAL-SPRING.
3. *Spring-seat.*
4. *Spring-cap.*

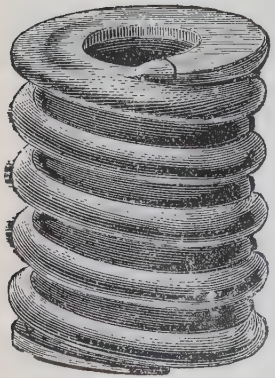


Fig. 207.
COMPOUND SPIRAL-SPRING.

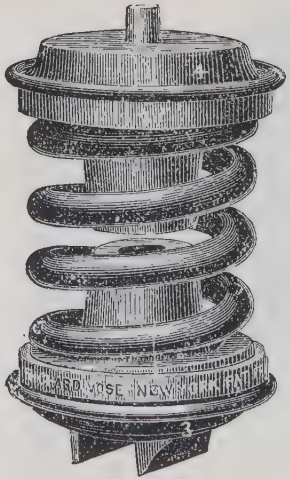


Fig. 208.
"VOSE" GRADUATED SPIRAL-SPRING.
3. *Spring-seat.* 4. *Spring-cap.*

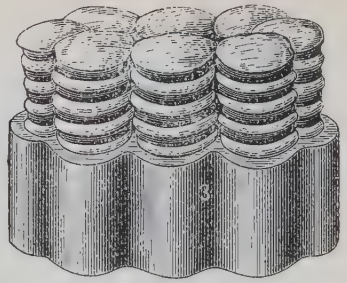


Fig. 09.
EIGHT-GROUP WOOL PACKED SPIRAL-SPRING.

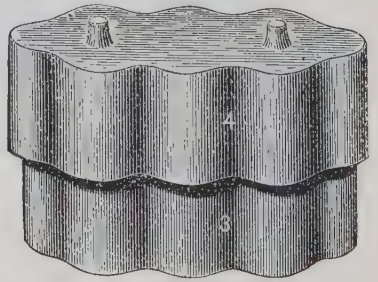


Fig. 210.
OUTSIDE-VIEW OF SPRING-CASE FOR EIGHT GROUP WOOL-PACKED SPIRAL SPRING.

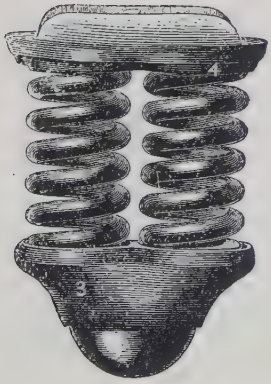


Fig. 211.
TWO-GROUP SPIRAL-SPRING.

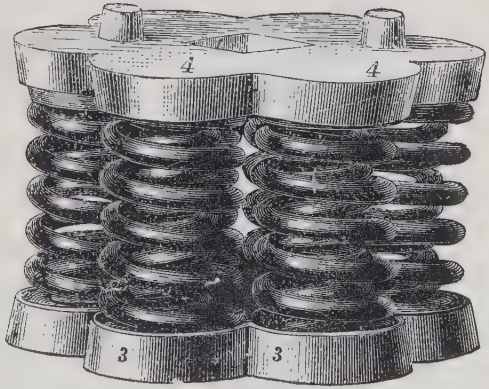


Fig. 212.
SIX-GROUP DOUBLE-COIL SPIRAL-SPRING.

3. *Spring-seat.*
4. *Spring-cap.*

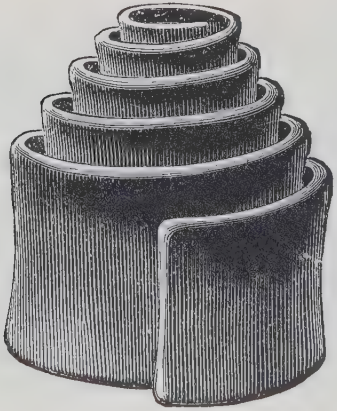


Fig. 213.
VOLUTE SPRING.

Fig. 214.
INDIA-RUBBER SPRING.

PASSENGER-CAR BODIES.

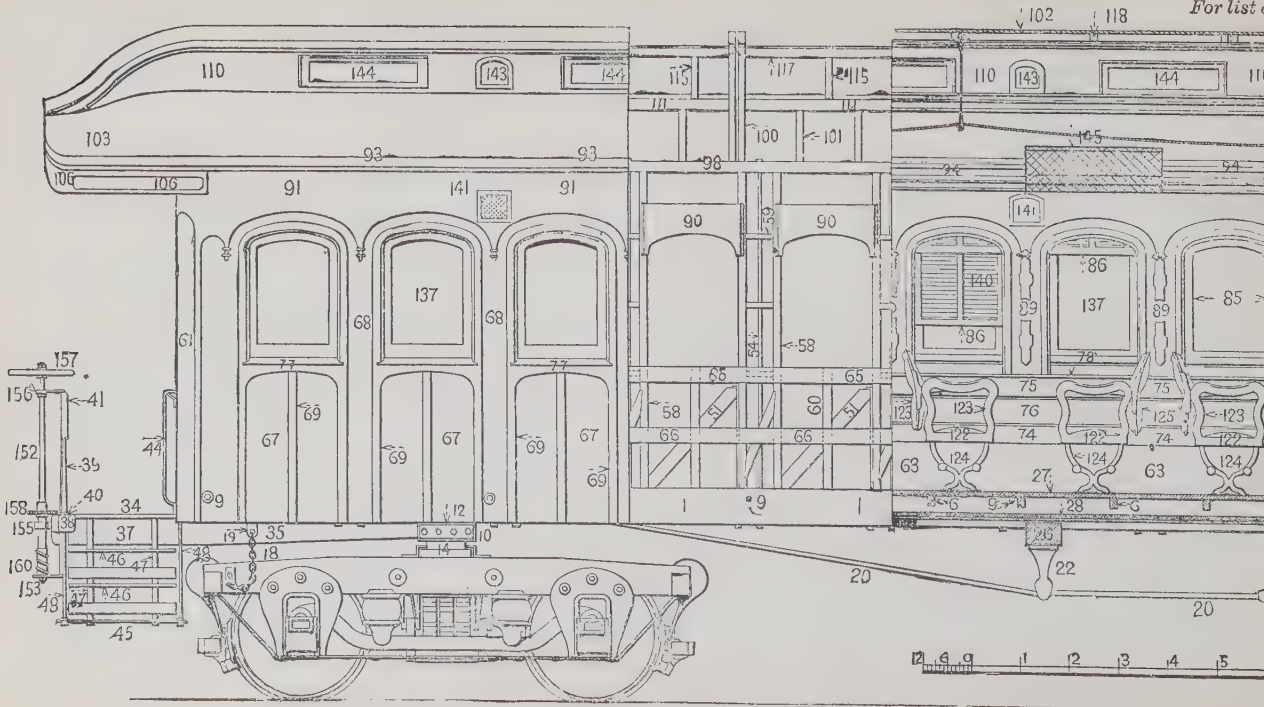
List of Names of the Parts of Passenger-car Bodies which are Designated by the Numbers in Figs. 215–232.

1. *Sill.*
2. *End-sill.*
3. *Intermediate Floor-timbers.*
4. *Centre Floor-timbers.*
5. *Floor-timber Distance-block.*
6. *Bridging.*
7. *Floor-timber Braces.*
8. *Sill Knee-iron.*
9. *Sill Tie-rod.*
10. *Body-bolster.*
11. *Body-bolster Truss-rod.*
12. *Body-bolster Truss-rod Washer.*
13. *Body-bolster Truss-block.*
14. *Body Side-bearings.*
15. *Body Centre-plate.*
16. *King-bolt.*
17. *King-bolt Plate.*
18. *Check-chain.*
19. *Body-check-chain Eye.*
20. *Body Truss-rod.*
21. *Body Truss-rod Saddle.*
22. *Body Queen-post.*
23. *Turnbuckle.*
24. *Truss-rod Iron.*
26. *Cross-frame Tie-timber.*
27. *Main-floor*, or *Car-floor.*
28. *Deafening-ceiling.*
29. *Draw-bar.*
30. *Draw-spring.*
31. *Draw-timbers.*
32. *Centre-draft Draw-bar.*
33. *Draw-bar Sector.*
34. *Car-platform, Platform-floor.*
35. *Platform-timbers.*
36. *Platform-timber Clamps.*
37. *Platform-sills.*
38. *Platform End-timber.*
39. *Platform-post.*
40. *Base-washer*, for *Platform-post.*
41. *Platform-rail.*
42. *Platform-railing Chain.*
43. *Platform-gate.*
44. *Body Hand-rail.*
45. *Platform-steps.*
46. *Tread-board.*
47. *Step-iron.*
48. *Step-hanger.*
49. *Splash-board.*
51. *Side Body-brace.*
52. *Side Body-brace-rod.*
53. *Brace Straining-rod.*
54. *Sill and Plate Rod.*
55. *Body-counterbrace.*
56. *Body-counterbrace-rod.*
57. *Brace-rod Washer.*
58. *Window-post.*
59. *Window-panel Furring.*
60. *Stud.*
61. *Corner-post.*
62. *Door-post.*

63. *Truss-plank.*
64. *Truss-plank Cap.*
65. *Belt-rail.*
66. *Panel-rail.*
67. *Outside-panel.*
68. *Outside Window-panel.*
69. *Panel-strips.*
70. *End-panel.*
71. *End Window-panel.*
72. *Name-panel.*
73. *Name-panel Frame.*
74. *Lower Wainscot-rail.*
75. *Upper Wainscot-rail.*
76. *Wainscot-panel.*
77. *Outside Window-sill.*
78. *Inside Window-sill.*
79. *Window-sill Cap.*
80. *Window-sill Moulding.*
81. *Belt-rail Cap.*
82. *Upper Belt-rail.*
83. *Sash Parting-strip.*
84. *Outside Window-stop.*
85. *Window-sash.*
86. *Window-blind Sash.*
86'. *Inside Window-stop* or *Window-casing.*
87. *Window Cove-moulding.*
88. *Window-moulding.*
89. *Inside Window-panel.*
90. *Window-lintel.*
91. *Letter-board.*
92. *Eaves Fascia-board.*
93. *Eaves-moulding.*
94. *Inside-cornice.*
95. *Inside-cornice Fascia-board.*
96. *Inside-cornice Sub-fascia-board.*
97. *Inside-lining.*
98. *Plate.*
99. *Door-lintel.*
100. *Carline* or *Compound-carline.*
101. *Rafter.*
102. *Roof-boards.*
103. *Platform-roof.*
104. *Platform-roof Carline.*
105. *Platform-roof End-carline.*
106. *Roof-apron.*
107. *Platform-hood.*
108. *Platform-hood Bow.*
109. *Platform-hood Post.*
110. *Clear-story.*
111. *Clear-story Sill.*
112. *Clear-story Bottom-rail.*
113. *Clear-story End-sill.*
114. *Clear-story Sill-facing.*
115. *Clear-story Post.*
116. *Clear-story End-panel,* or *Ventilator.*
117. *Clear-story Plate.*
118. *Clear-story Carline.*
119. *Clear-story Eaves-moulding.*
120. *Clear-story Inside-cornice.*
121. *Clear-story Soffit-board.*
122. *Car-seat.*
123. *Seat-end,* or *Aisle Seat-end.*
124. *Seat-stand.*
125. *Seat-back.*
126. *Seat-division.*
127. *Foot-rest.*
128. *Stove.*
129. *Stove-pipe Jack.*
130. *Water-closet.*
131. *Water-closet Seat.*
132. *Urinal.*
133. *Water-cooler.*
134. *Water-alcove.*
135. *Centre-lamp.*
136. *Lamp-jack.*
137. *Window.*
138. *Twin-window.*
139. *Small-window.*
140. *Window-blind.*
141. *Frieze-ventilator.*
142. *End-ventilator.*
143. *Clear-story Side-ventilator.*
144. *Clear-story Window.*
145. *Basket-rack.*
146. *Door-mullion.*
147. *Bottom-rail,* of *Door.*
148. *Middle Door-rail.*

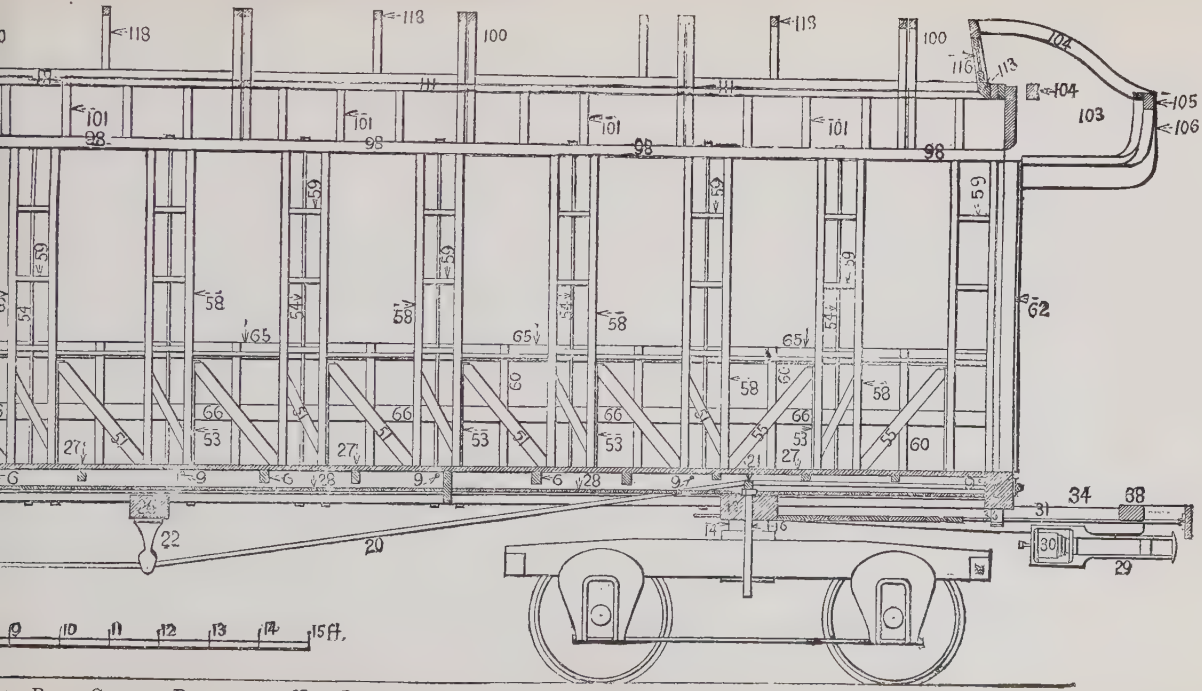
149. *Top-rail, of Door.*
150. *Door-stile.*
151. *Door-panel.*
152. *Brake-shaft.*
153. *Brake-shaft Step.*
155. *Lower Brake shaft Bearing.*
156. *Upper Brake-shaft Bearing.*
157. *Brake-wheel.*
158. *Brake Ratchet-wheel.*
159. *Brake-pawl.*
160. *Brake-chain Worm.*
161. *Flag-holder Plate.*
162. *Platform Tie-rod.*

For list



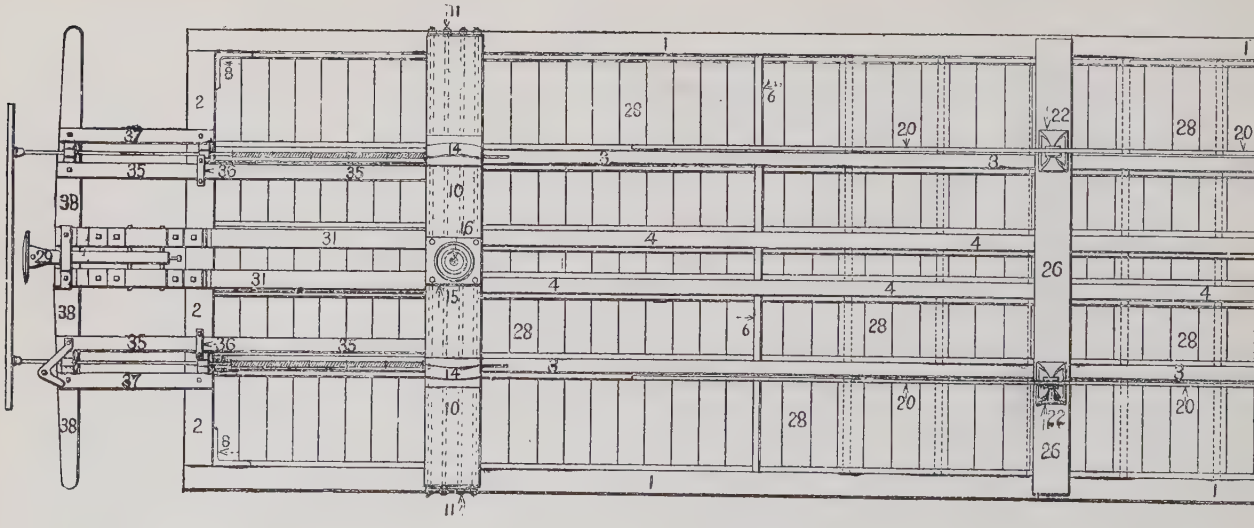
Outside View. *Outside View of Framing* *Longitudinal Section.* *Fig. 21*

parts designated by the numbers in the engraving, see page 302.



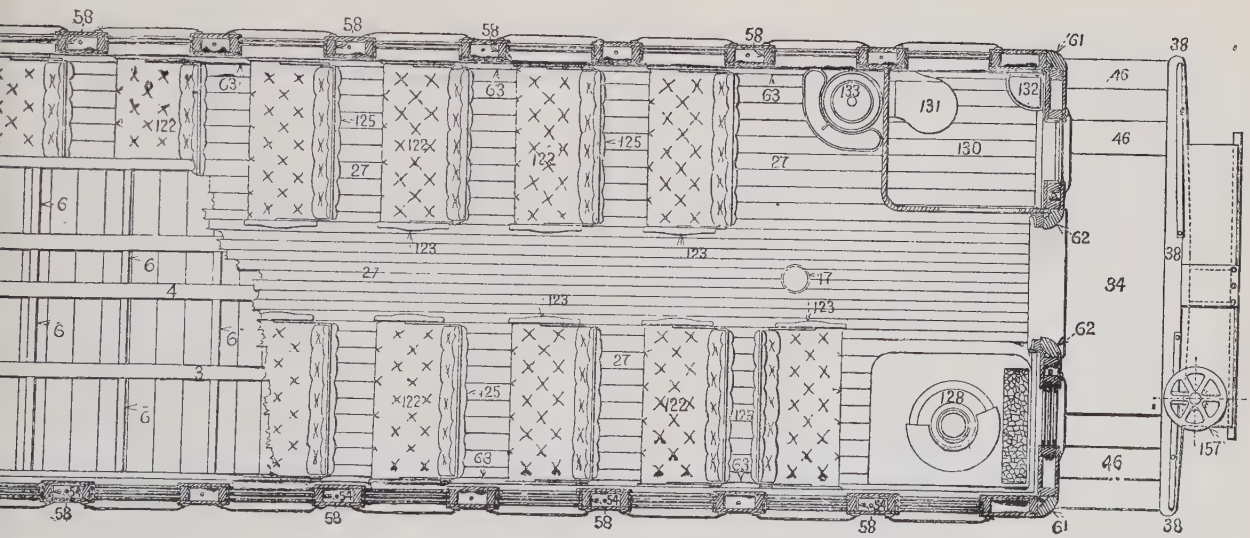
AR BODY, CENTRAL RAILROAD OF NEW JERSEY. *Longitudinal Section showing Framing.*

For list of names of the parts designa



Inverted Plan.

mbers in the engraving, see page 302.



howing Floor Framing.

Plan showing Floor, Seats, etc.

LROAD OF NEW JERSEY.

For list of names of the parts designated by the numbers in the engravings, see page 302.

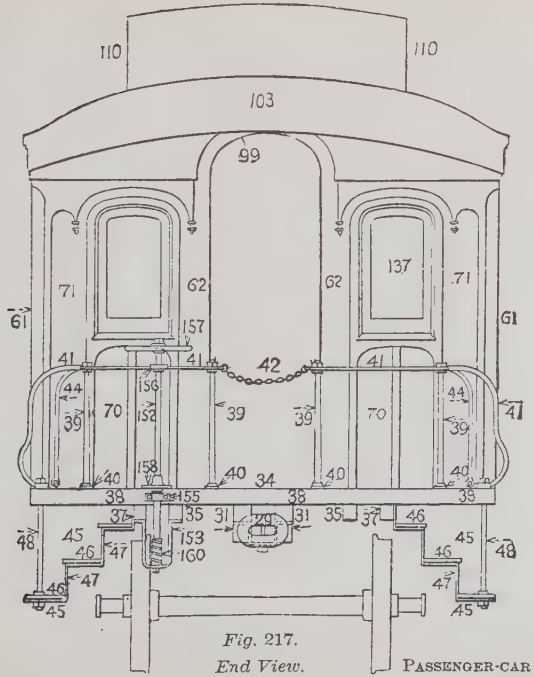


Fig. 217.
End View.

PASSENGER-CAR BODY, CENTRAL RAILROAD OF N. J.

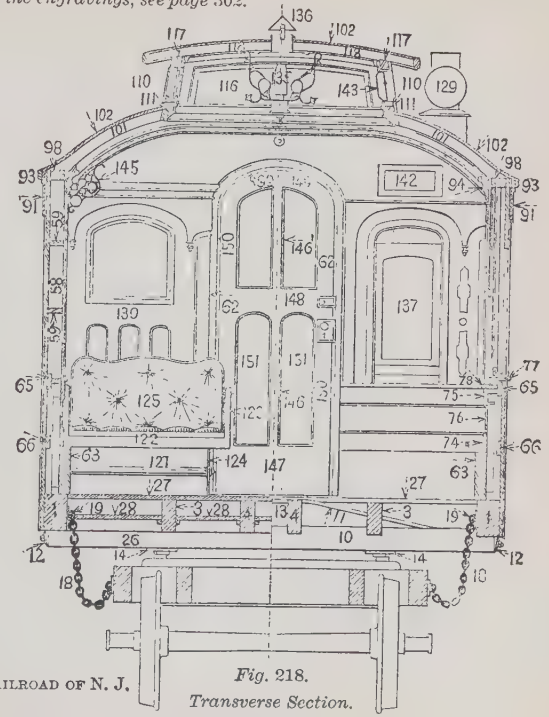
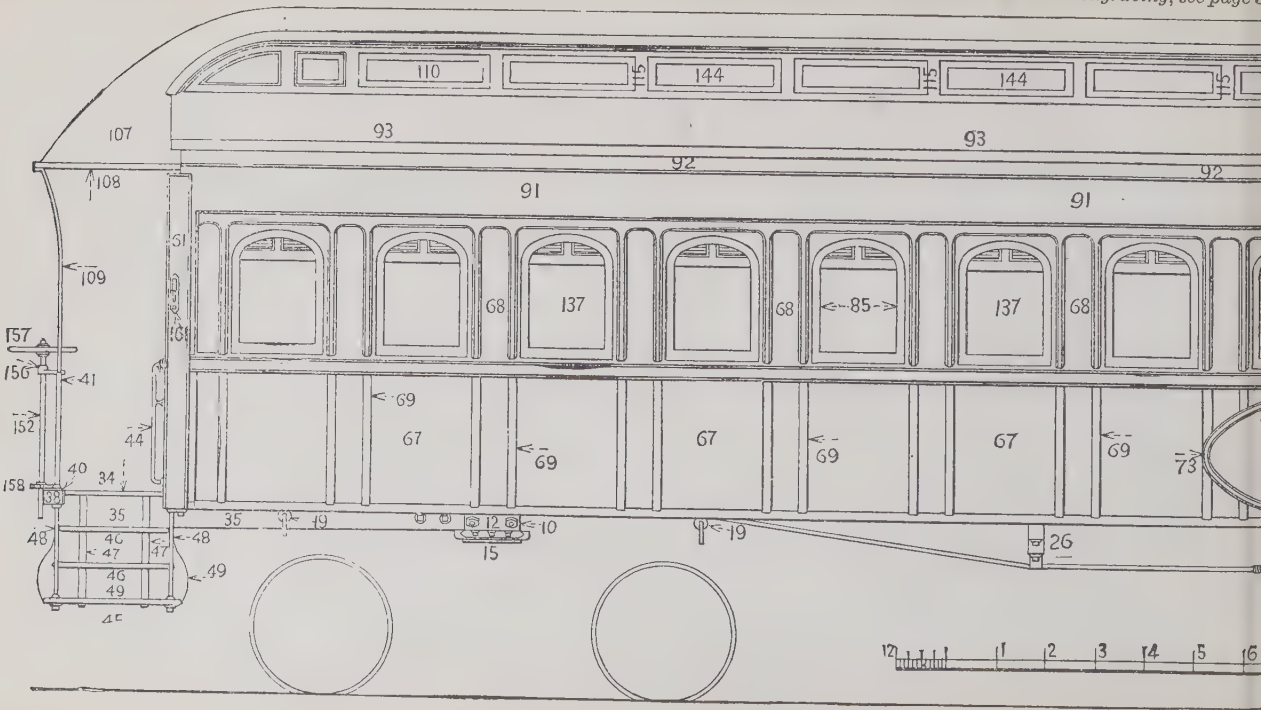


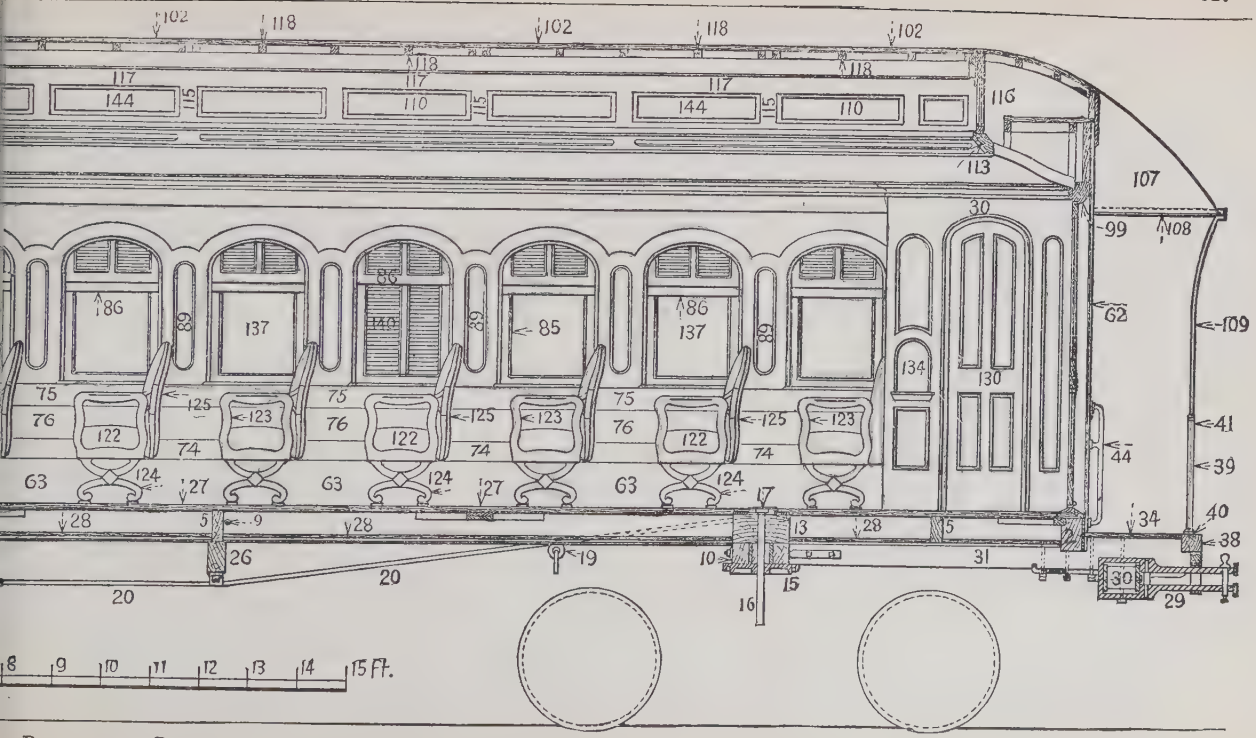
Fig. 218.
Transverse Section.

For list of names of the parts designated by the numbers in the engraving, see page 3



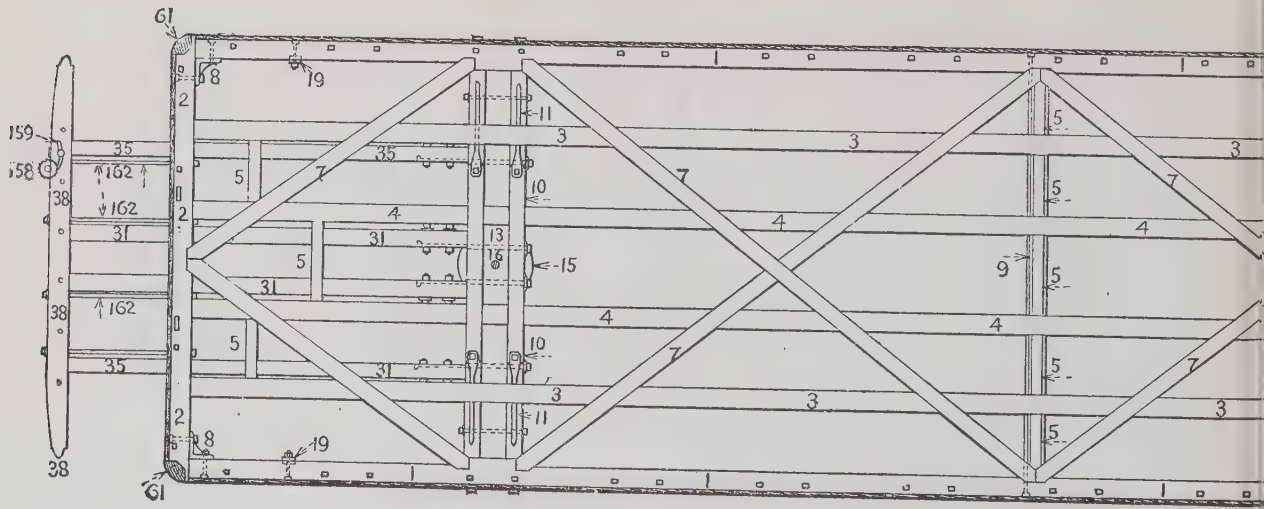
Side View.

Fig. 219. PASSENGER



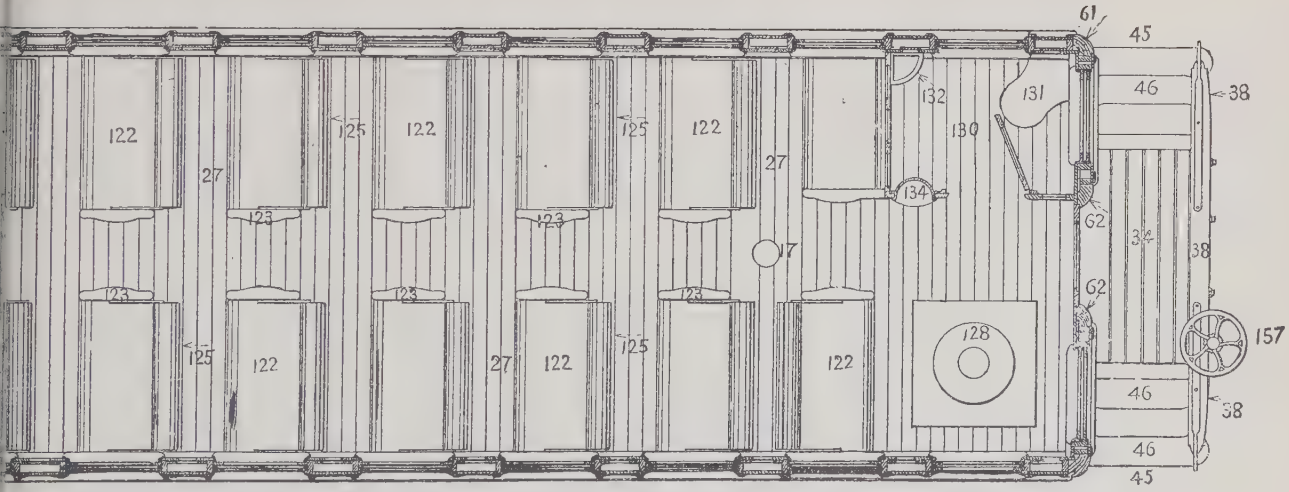
Y, PENNSYLVANIA RAILROAD. *Longitudinal Section.*

For list of names of the parts designa

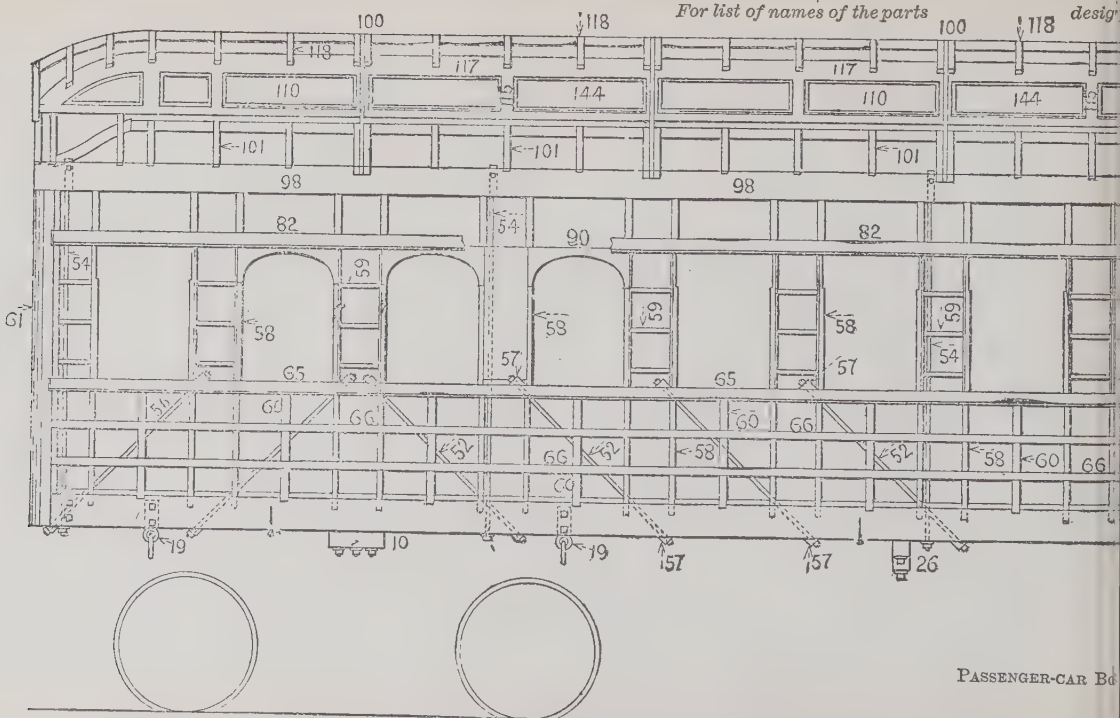


Half Plan, showing Floor Framing.

e numbers in the engraving, see page 302.

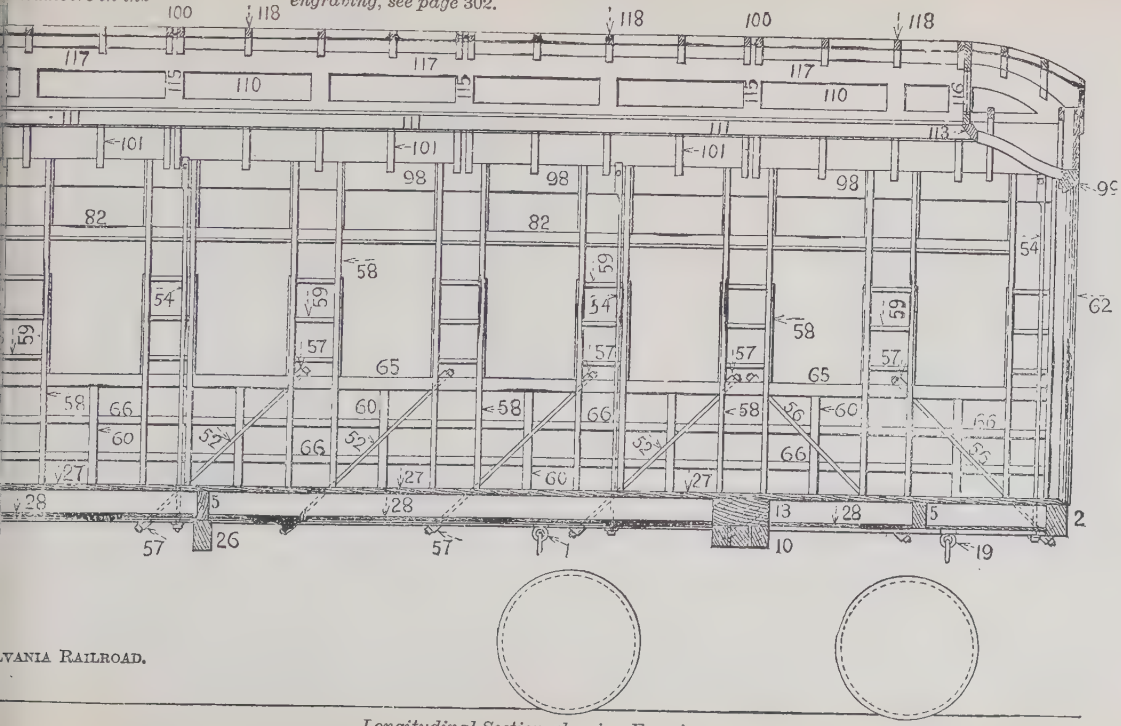


Half Plan, showing Floor, Seats, etc.



Side View, showing Framing.

e numbers in the engraving, see page 302.



VANIA RAILROAD.

Longitudinal Section, showing Framing.

For list of names of the parts designated by the numbers in the engravings, see page 302.

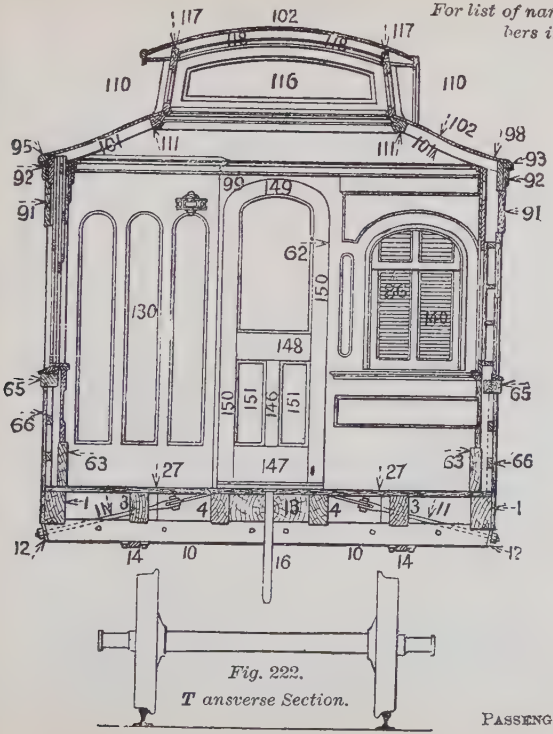


Fig. 222.
Transverse Section.

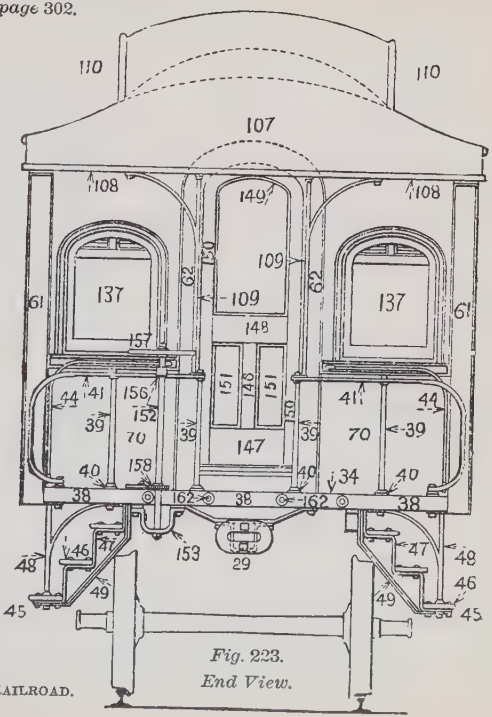


Fig. 223.
End View.

PASSENGER-CAR BODY, PENN. RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 302.

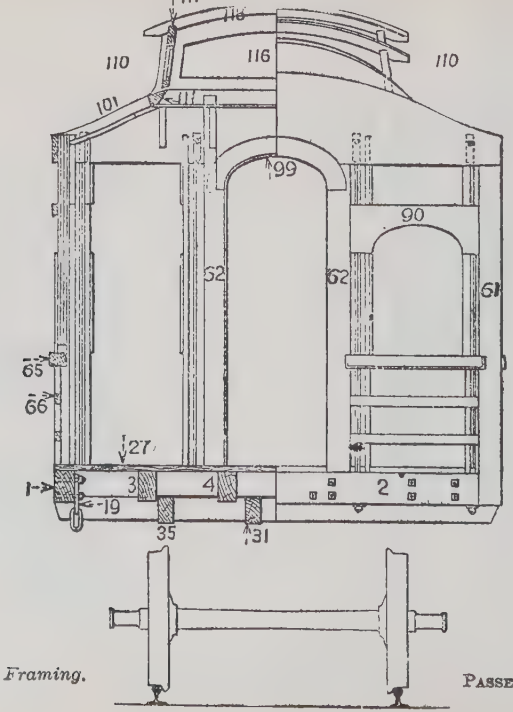


Fig. 224. End View, showing Framing.

PASSENGER-CAR BODY, PENN. RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 302.

Fig. 227. Section of Side of Clear-story.

Fig. 226.

Fig. 225. Section of Side of Passenger-car Body, Pennsylvania Railroad.

For list of names of the parts designat

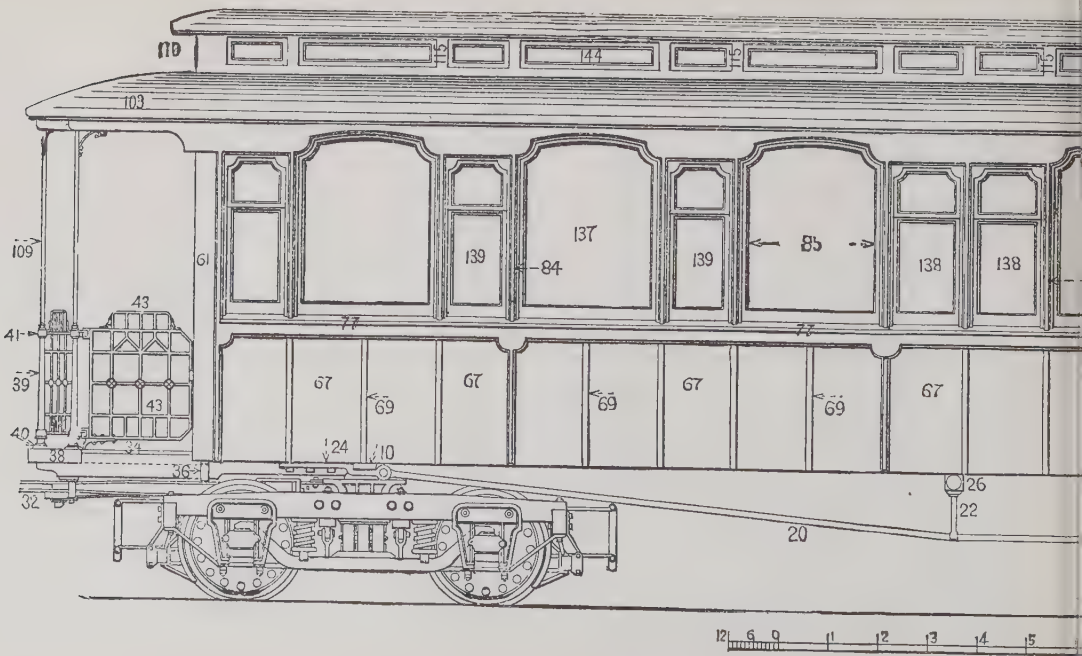
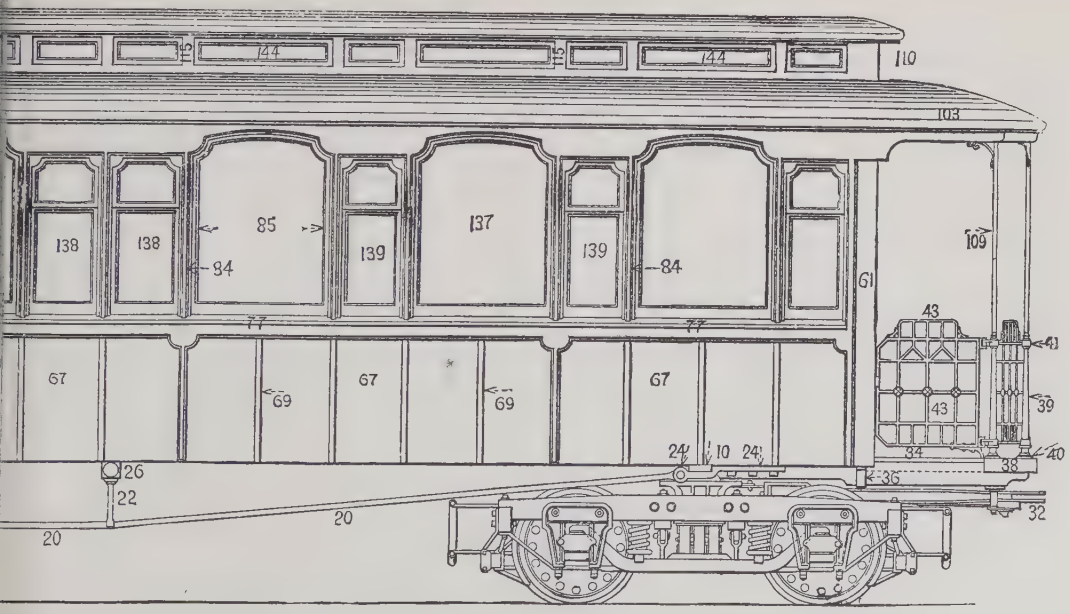


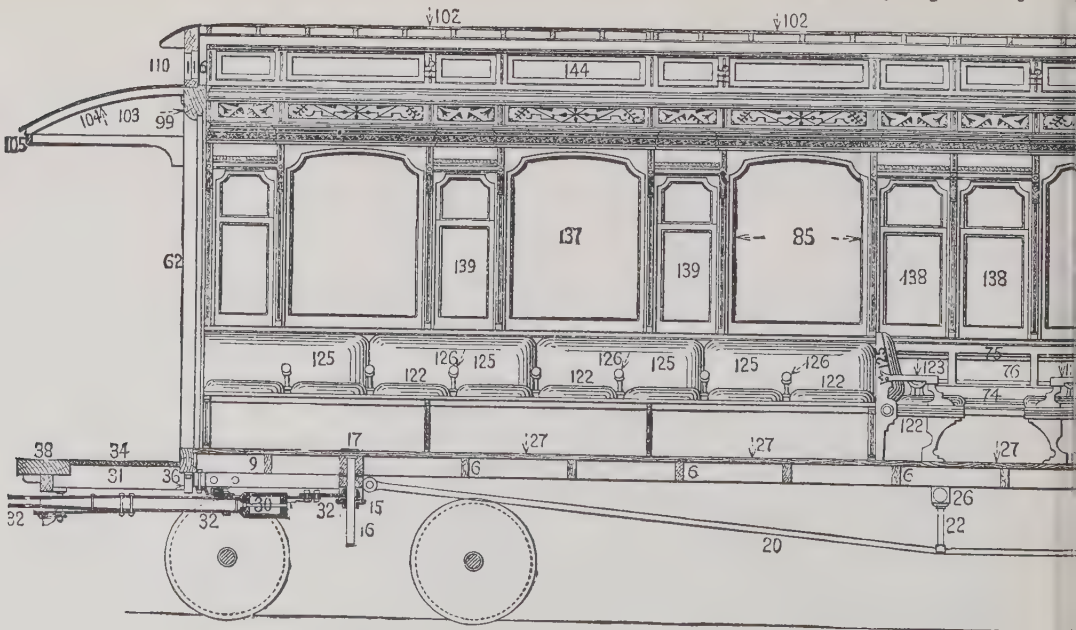
Fig. 228. PASSENGER-CAR, METRO
S

nbers in the engraving, see page 302.



VATED RAILROAD OF NEW YORK.

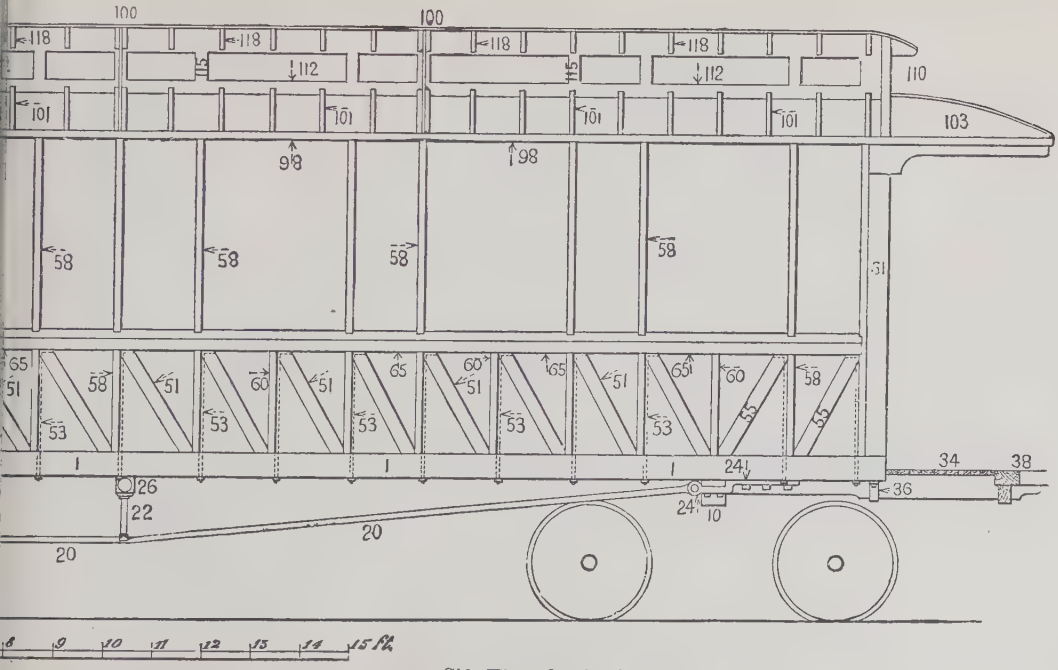
For list of names of the parts designated



Longitudinal Section.

PASSENGER-CAR BODY, METROPOL

nbers in the engraving, see page 302.



Side View, showing Framing.

ATED RAILROAD OF NEW YORK.

For list of names of the parts designated by the numbers in the engraving, see page 304.

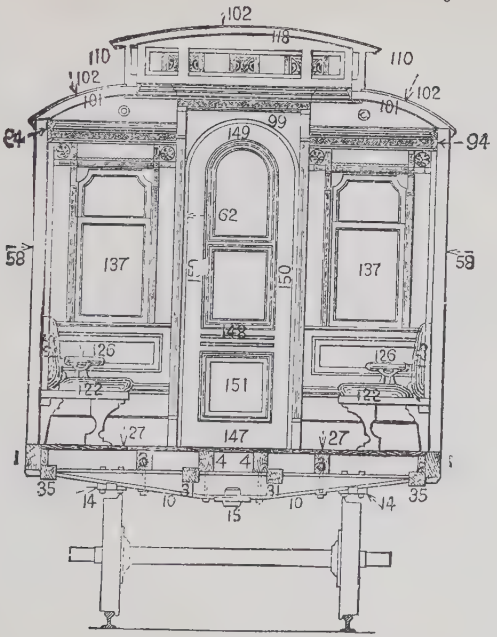


Fig. 230.

PASSENGER-CAR BODY, METROPOLITAN ELEVATED RAILROAD.

Transverse Section.

For list of names of the parts designated by the numbers in the engraving, see page 302.

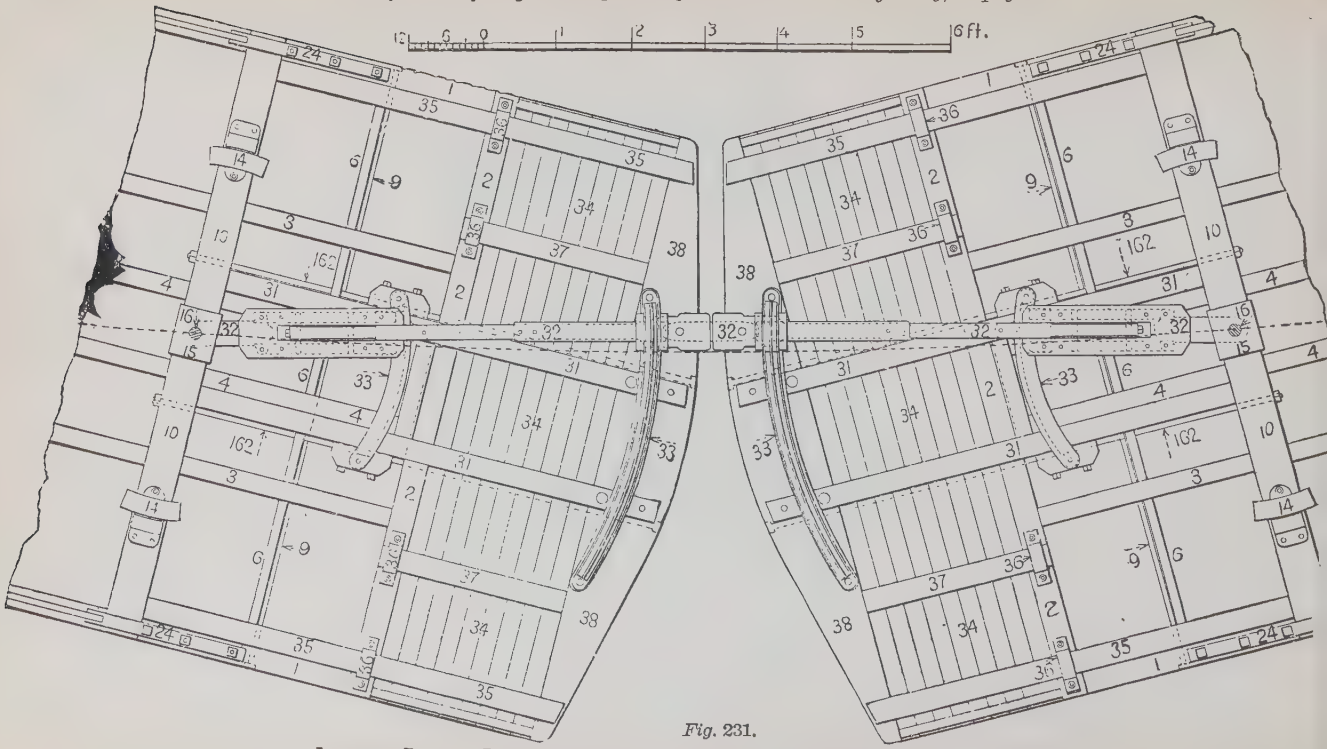


Fig. 231.

INVERTED PLAN OF DRAW-GEAR OF PASSENGER-CAR, METROPOLITAN ELEVATED RAILROAD.

For list of names of the parts designated by the numbers in the engraving, see page 302.

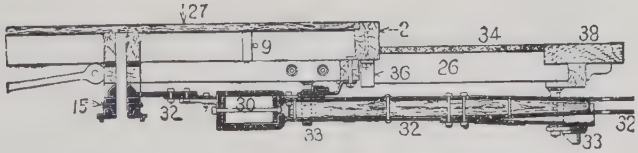


Fig. 232.

DRAW-BAR OF PASSENGER-CAR, METROPOLITAN ELEVATED RAILROAD.

Longitudinal Section.

BOLSTERS, ETC.

LIST OF NAMES OF THE PARTS OF BOLSTERS, ETC., WHICH ARE DESIGNATED BY THE LETTERS AND NUMBERS IN FIGS. 233-239.

1. *Body-bolster.*
1. *Body-bolster Compression-bar.*
2. *Body-bolster Tension-bar.*
3. *Body-bolster Thimble.*
4. *Body-bolster Truss-block.*
5. *Body-bolster Truss-rod Bearing.*
6. *Body-bolster Truss-rod.*
7. *Body-bolster Truss-rod Washer.*
8. *Body Centre-plate.*
9. *King-bolt.*
10. *King-bolt Plate.*
11. *Body Side-bearing.*
12. *Truck Side-bearing.*
13. *Truck-bolster.*
14. *Truck Centre-plate.*
15. *Centre-plate Block.*

For list of names of the parts designated by the numbers in the engravings, see page 341.

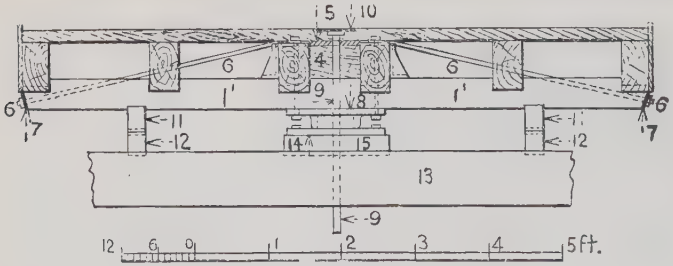


Fig. 233.
WOODEN BODY-BOLSTER.
Transverse Section of Floor-timbers, showing Bolsters.

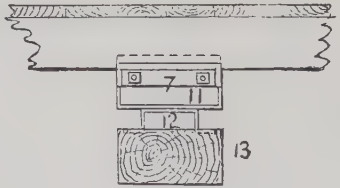


Fig. 234.
WOODEN BODY-BOLSTER.
Side View.

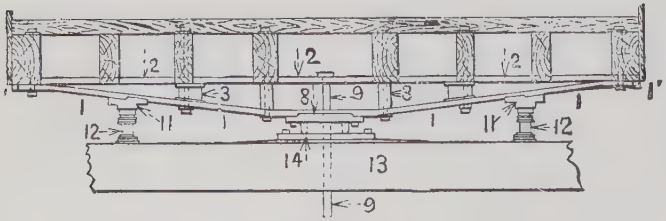


Fig. 235.
IRON BODY-BOLSTER.
Transverse Section of Floor-timbers, showing Bolsters.

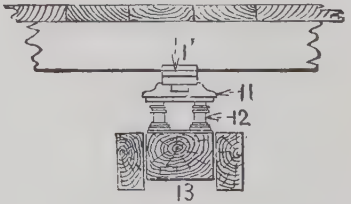


Fig. 236.
IRON BODY-BOLSTER.
Side View.

For list of names of the parts designated by the numbers in the engravings, see page 341.

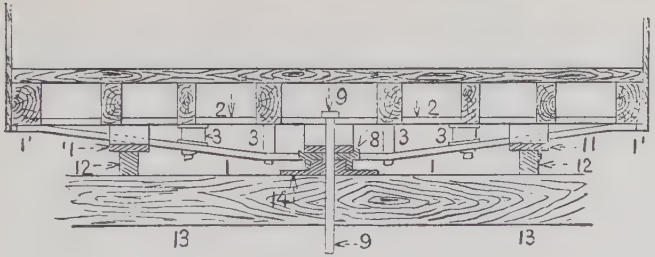


Fig. 237.
DOUBLE IRON BODY-BOLSTER.
Transverse Section of Floor, showing Bolsters.

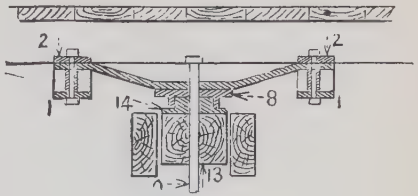


Fig. 238.
DOUBLE IRON BODY-BOLSTER.
Cross Section.

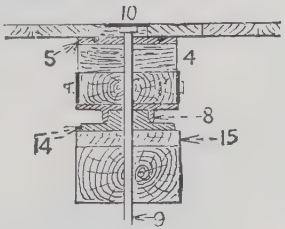


Fig. 239.
COMPOUND BODY-BOLSTER.
Cross Section.

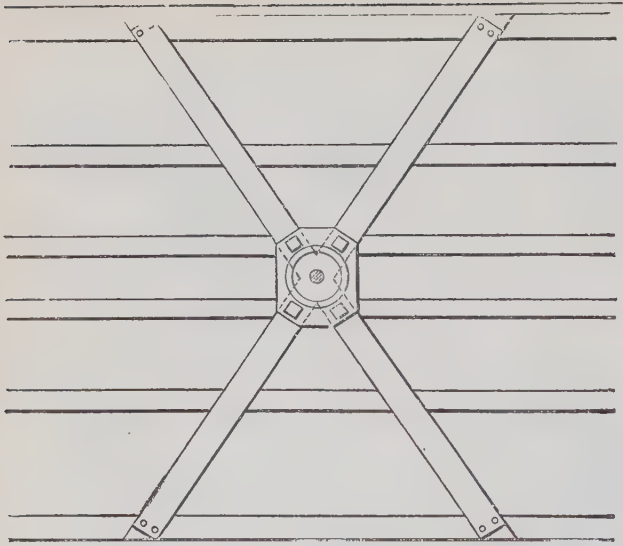


Fig. 240.
INVERTED PLAN OF SNOW'S BODY-BOLSTER.

List of names of the parts which are designated by the numbers in fig. 242 :

1. *Body Queen-post.*
2. *Body Queen-post Stay.*
3. *Cross-frame Truss-rod.*
4. *Cross-frame Queen-post.*
5. *Cross-frame Tie-timber.*

Fig. 240½.
SNOW'S BODY-BOLSTER.
Side View.

Fig. 241.
SNOW'S BODY-BOLSTER.
End View.

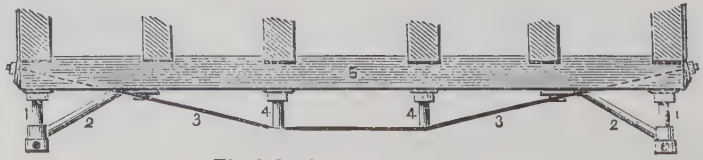


Fig. 242. CROSS-FRAME TRUSS.

PASSENGER-CAR STEPS.

List of Names of the Parts of Passenger-car Steps, Platform, etc., Designated by the Numbers in Fig. 244:

1. *Brake-chain Worm.*
2. *Nosing of Stairs.*
3. *Platform Trap-door.*
4. *Safety Coupling-chain.*
5. *Step-riser.*
6. *Tread-board.*
7. *String-board.*
8. *Brake-shaft.*
9. *Brake Ratchet-wheel.*
10. *Brake-pawl.*

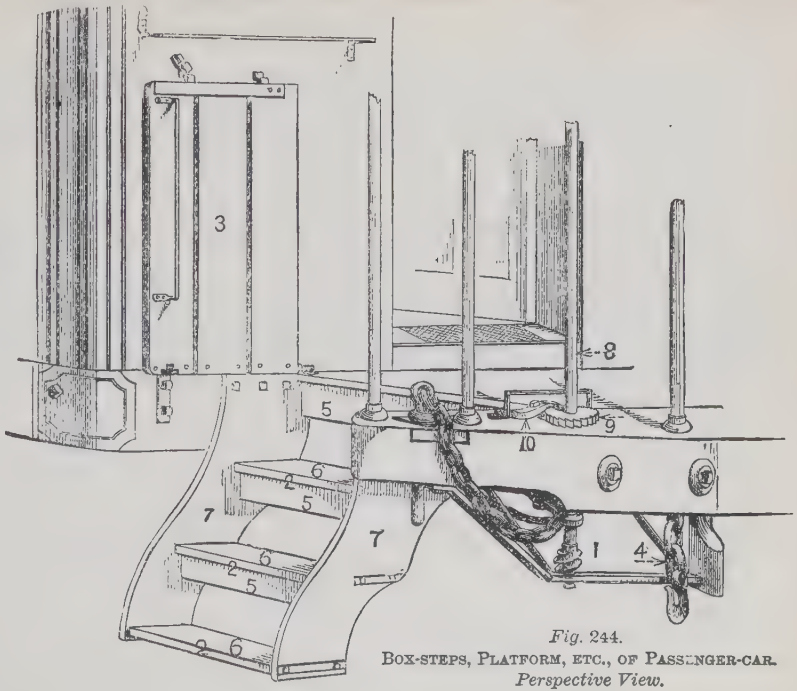


Fig. 244.
Box-steps, Platform, etc., of Passenger-car.
Perspective View.

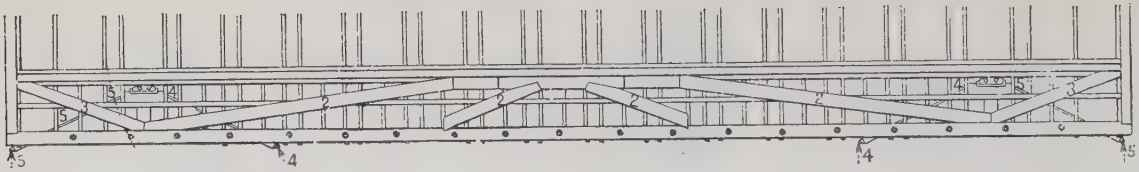


Fig. 245.

Side View of PORTION OF THE SIDE-FRAME OF A PASSENGER-CAR, SHOWING—1, *Compression-beam*; 2, *Compression-beam Brace*; 3, *Counter-brace*; 4, *Body Brace-rod*; 5, *Body Counter-brace Rod.*

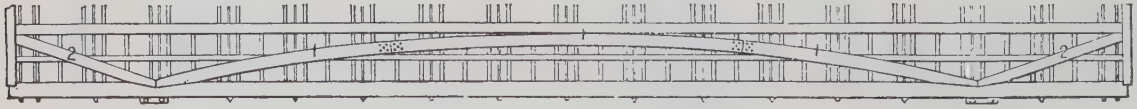


Fig. 246.

Side View of PORTION OF THE SIDE-FRAME OF A PASSENGER-CAR, SHOWING—1, *Truss-arch*; 2, *Body Counter-brace.*

Fig. 247.

PROFILE-CARLINE.

Fig. 248.

SECTION OF COMPOUND-CARLINE.

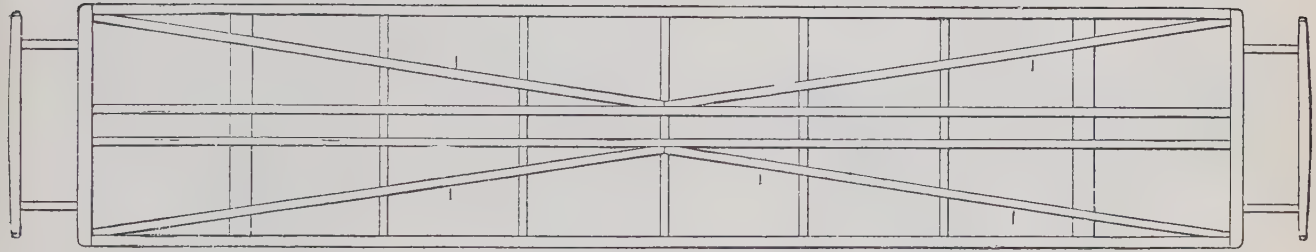


Fig. 249.

Plan of FLOOR-FRAMING, SHOWING—1, *Diagonal Floor-timber.*

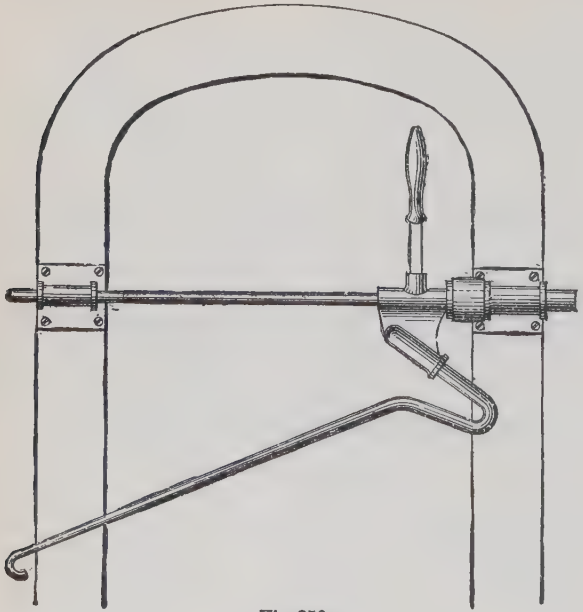


Fig. 250.
MAIL-CATCHER.

DRAW-GEAR.

LIST OF NAMES OF THE PARTS OF DRAW-GEAR WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 251–264:

1. *Draw-bar.*
2. *Draw-bar Face-plate.*
3. *Draw-bar Head.*
4. *Draw-bar Distance-piece.*
5. *Draw-spring*
6. *Auxiliary Buffer-spring.*
7. *Draw-bar Bolt.*
8. *Draw-spring Stop.*
9. *Draw-bar Carry-iron.*
10. *Draw-timbers.*
11. *Draw-timber Guards.*
12. *Draw-timber Tie-bar.*
13. *Draw-bar Guides.*
14. *Draw-bar Follower-plates.*
15. *Auxiliary Draw-bar Follower-plates.*
16. *Draw-bar Jaw.*
17. *Draw-bar Stop.*
18. *Draw-timber Pocket.*
19. *Draw-rod.*
20. *Coupling-pin.*

For list of names of the parts designated by the numbers in the engravings, see page 348.

Fig. 251.
Side View.

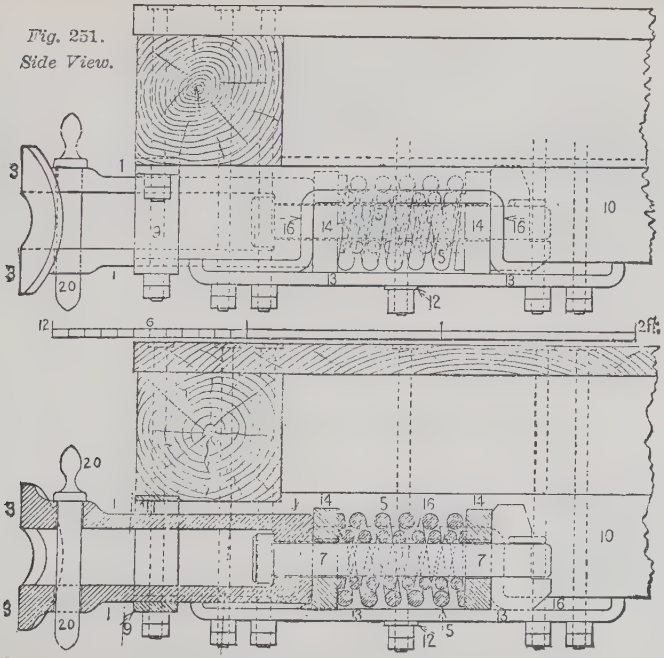


Fig. 252. Longitudinal Section. DRAW-GEAR FOR FREIGHT-CARS, PENNSYLVANIA RAILROAD.

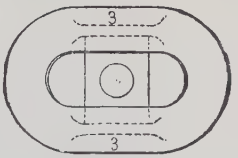


Fig. 253.
END VIEW OF DRAW-BAR HEAD.

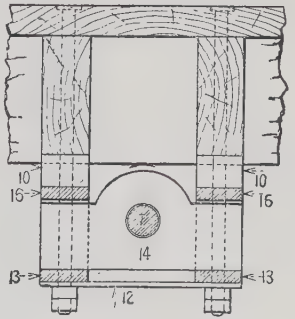


Fig. 254.
Transverse Section.

For list of names of the parts designated by the numbers in the engravings, see page 348.

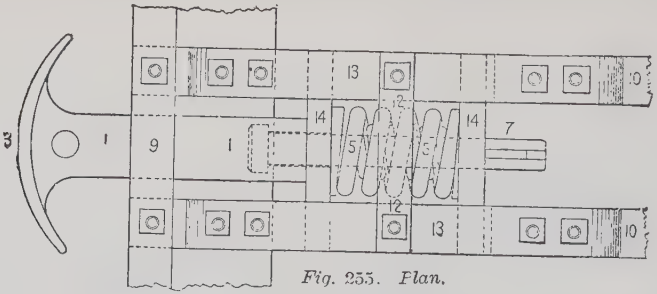


Fig. 255. Plan.

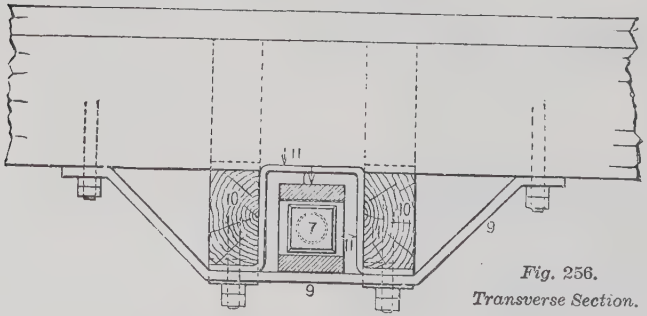


Fig. 256.
Transverse Section.

DRAW-GEAR FOR FREIGHT-CARS, PENNSYLVANIA RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 348.

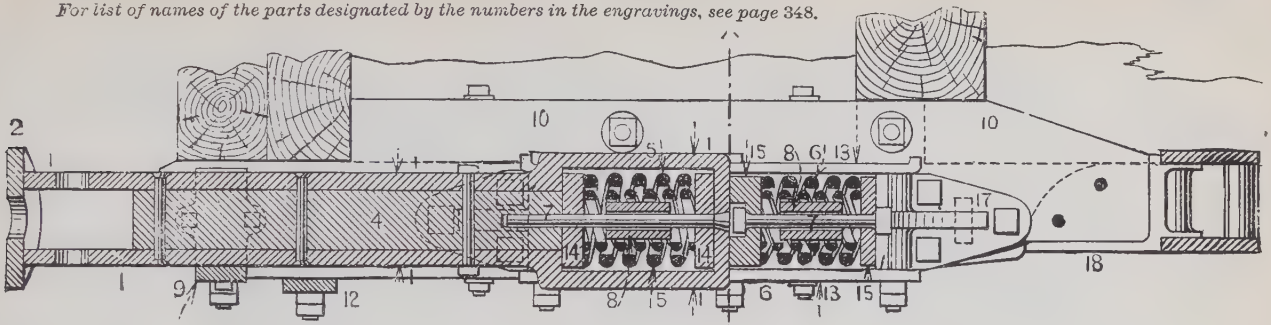


Fig. 257. *Longitudinal Section.*

Fig. 258. Draw-gear for Freight-cars, New York Central Railroad. *Side View, with Draw-bar Removed.*

For list of names of the parts designated by the numbers in the engravings, see page 348.

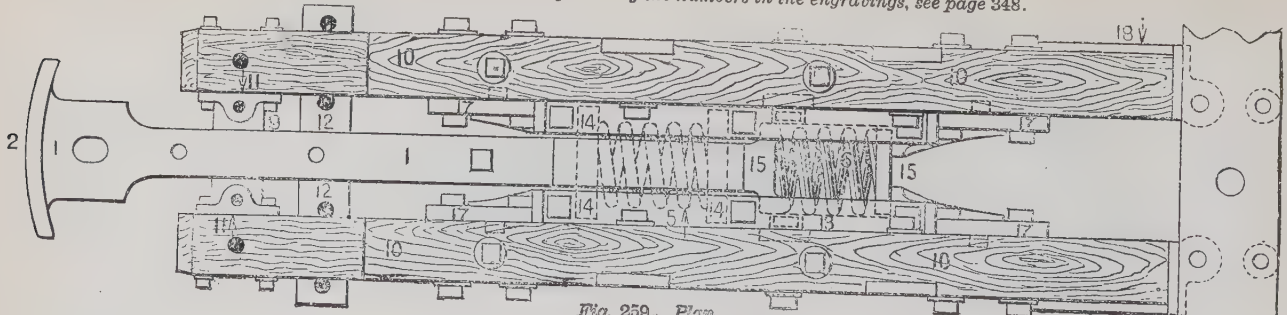


Fig. 259. Plan.

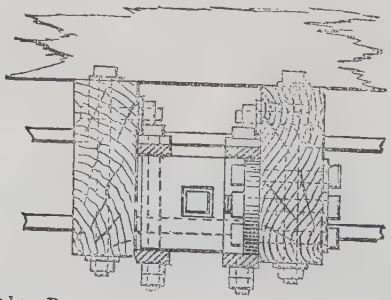


Fig. 260. Side View, with Draw-bar Removed. DRAW-GEAR FOR FREIGHT-CARS, NEW YORK CENTRAL RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 348.

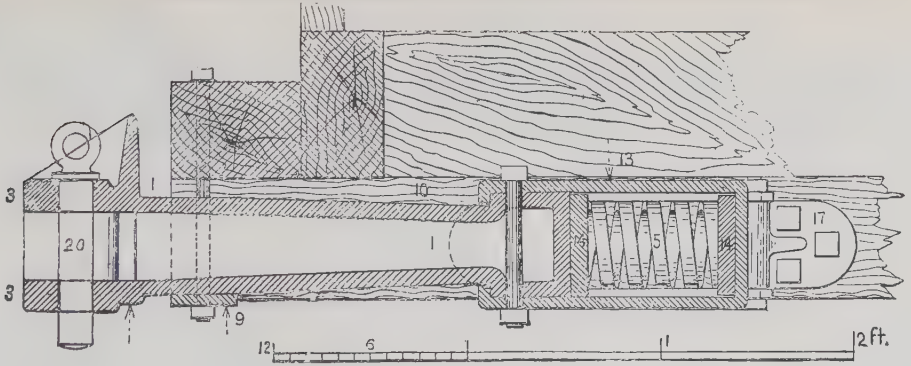


Fig. 261. Longitudinal Section.

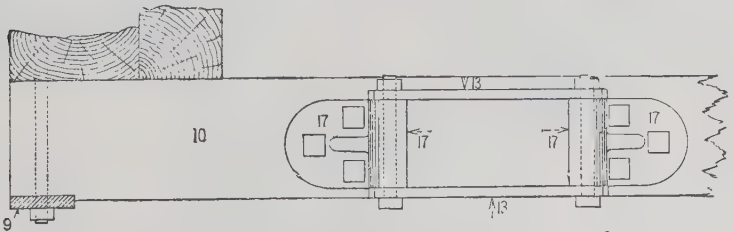


Fig. 262. Longitudinal Section, with Draw-bar Removed.

DRAW-GEAR, WITH POTTER DRAW-BAR, FOR FREIGHT-CARS, CHICAGO, BURLINGTON & QUINCY RAILROAD.

For list of names of the parts designated by the numbers in the engravings, see page 348.

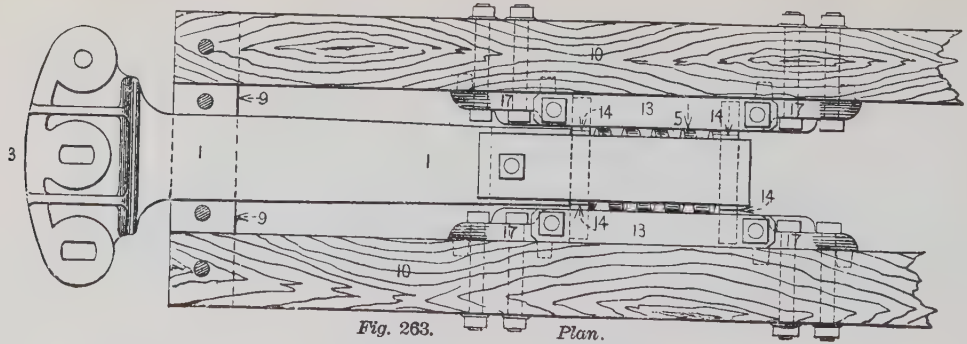


Fig. 263. *Plan.*

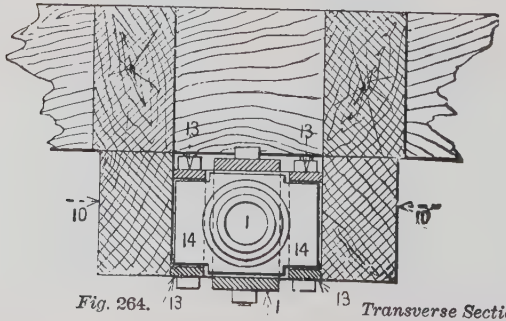


Fig. 264. *Transverse Section.*

DRAW-GEAR, WITH POTTER DRAW-BAR, FOR FREIGHT-CARS, CHICAGO, BURLINGTON & QUINCY RAILROAD.

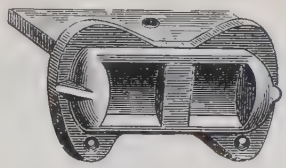


Fig. 265.

DRAW-BAR SIDE-CASTING.

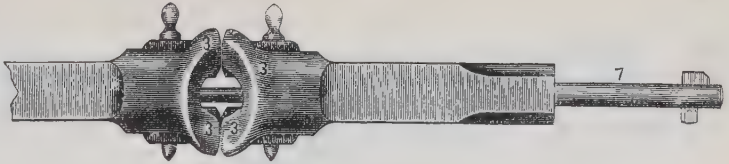


Fig. 266.

SAFFORD DRAW-BAR.

3. *Draw-bar Head.*
7. *Draw-bar Bolt.*

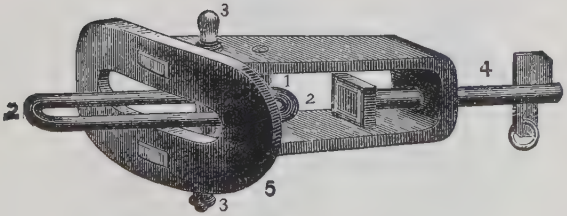


Fig. 267.

BOLT DRAW-BAR.

1. *Coupling-link Rivet.*
2. *Fast Coupling-link.*
3. *Fast Coupling-pin.*
4. *Draw-bar Bolt.*
5. *Draw-bar Face-plate.*

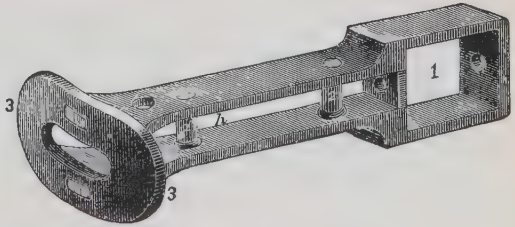


Fig. 268.

SPRING-POCKET DRAW-BAR.

1. *Draw-bar Spring-pocket.*
2. *Draw-bar Distance-piece.*
3. *Draw-bar Face-plate.*

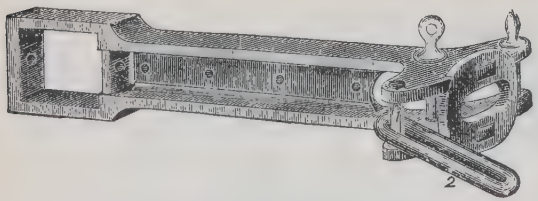


Fig. 269. THREE-LINK OR POTTER DRAW-BAR.
1. *Coupling-link Rivet.* 2. *Fast Coupling-link.*

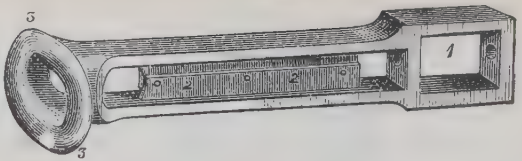


Fig. 270. SOLID-HEAD DRAW-BAR.
1. *Draw-bar Pocket.* 2. *Draw-bar Distance-piece.*
3. *Draw-bar Head.*

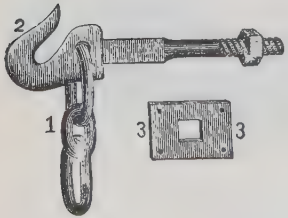


Fig. 271.
DRAW-HOOK.
1. *Chain Coupling-links, or Triple Coupling-link.*
2. *Draw-hook.*
3. *Draw-hook Plate.*

Fig. 272.
COUPLING-LINK.

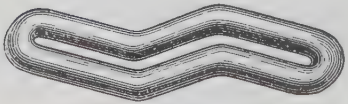


Fig. 273.
CROOKED COUPLING-LINK.

Fig. 274.
SOLID-HEAD COUPLING-PIN.

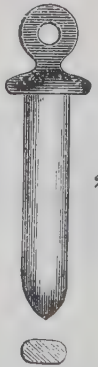


Fig. 276. *Section.*
EYE-HEAD OR FLAT COUPLING-PIN.

Fig. 277.
BENT-HEAD COUPLING-PIN.

Fig. 275.

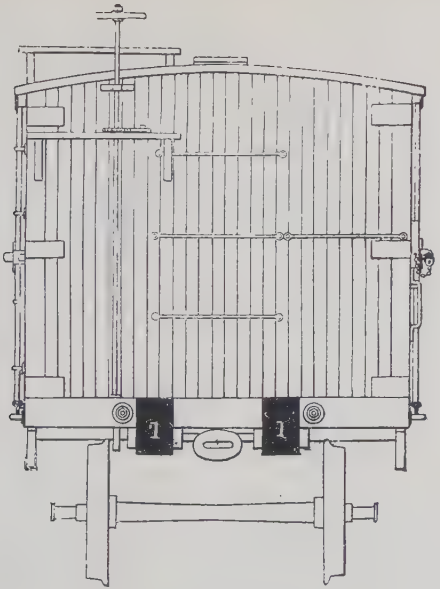


Fig. 278
1-1. *Dead-blocks.*

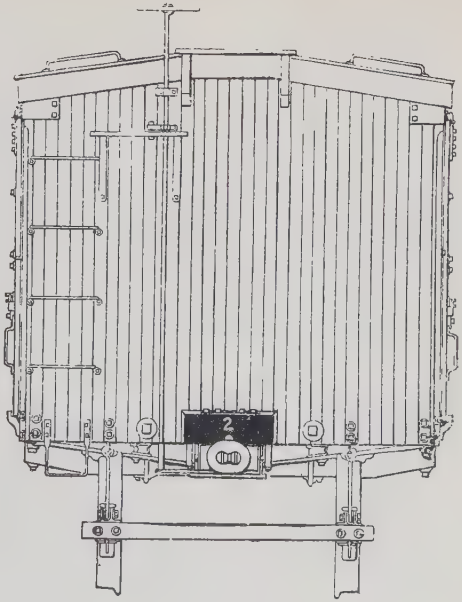


Fig. 279.
2. *Buffer-block.*

Fig. 280. *Inverted Plan.*

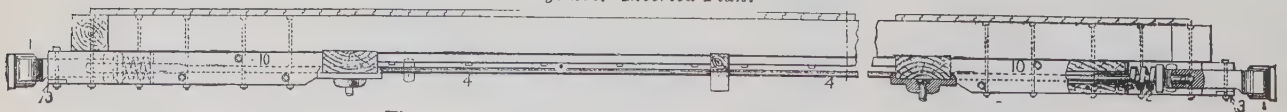


Fig. 281. CONTINUOUS DRAW-BAR. *Longitudinal Section.*

1. *Draw-bar.* 2. *Draw-spring.* 3. *Draw-bar Carry-iron.* 4. *Draw-rod.* 10. *Draw-timber.*

MILLER-PLATFORM.

List of Names of the Parts of the Miller-platform which are Designated by the Numbers in Figs. 282–289 :

1. *Brake-shaft Brace.*
2. *Buffer-bar.*
3. *Buffer-plate.*
5. *Buffer-spring.*
6. *Buffer-spring Cup.*
7. *Buffer-spring Washer.*
8. *Buffer-stem Washer.*
9. *Buffer-thimble.*
11. *Draw-bar Coupling-hook.*
12. *Centre-sills.*
13. *Stop, for Coupling-hook.*
14. *Stop-brace.*
15. *Uncoupling-lever.*
16. *Uncoupling-chain.*
17. *Uncoupling-lever Ratchet.*
18. *Uncoupling-lever plate.*
19. *Uncoupling-lever Wedge.*
20. *Wedge-chain.*
21. *Trunnion-plates.*
22. *Platform Truss-beam.*
23. *Platform Truss-rod.*
24. *Buffer-spring Beam.*
25. *Draw-bar Timber.*
26. *Platform-timbers.*
27. *Platform-sills.*
28. *Platform End-timber.*
29. *Suspender-beam.*
30. *Stirrup-block.*
31. *Draw-bar Carry-iron.*
32. *Inner Draw-bar Carry-iron.*
35. *Buffer-head.*
36. *Buffer-shank.*
37. *Buffer-stem.*
39. *Coupling-pin Plate.*
40. *Coupling-pin Chafing-plate.*
41. *Coupling-pin Chain.*
42. *Coupling-pin-chain Eye.*
44. *Brake-shaft Thimble.*
46. *Inscription-plate.*
48. *Draw-bar Chafing-plate.*
49. *Coupling-spring.*
50. *Coupling-spring Bracket.*
51. *Platform Tie-rods.*

For list of names of the parts designated by the numbers in the engravings, see page 359.

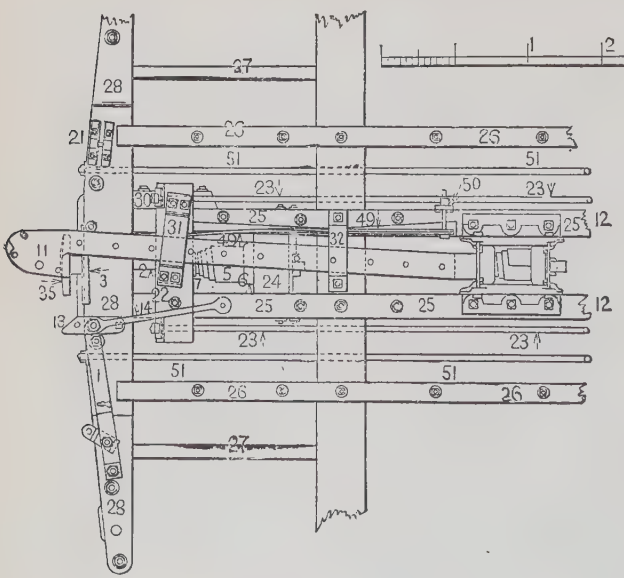


Fig. 282. Inverted Plan.

MILLER-PLATFORM.

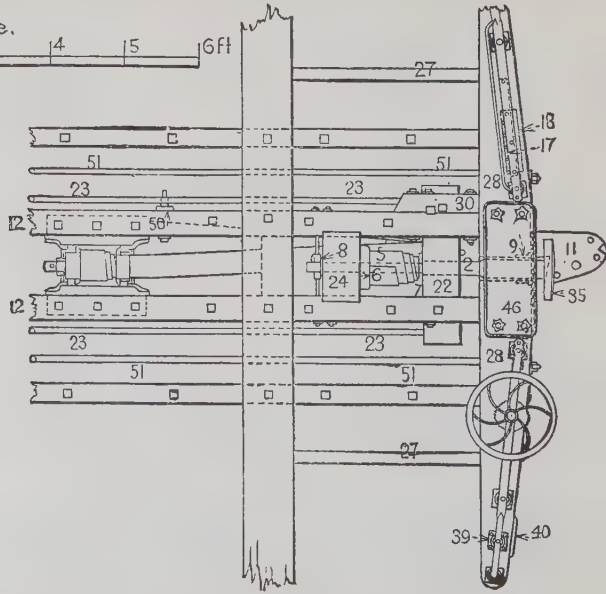


Fig. 283. Plan.

For list of names of the parts designated by the numbers in the engravings, see page 359.

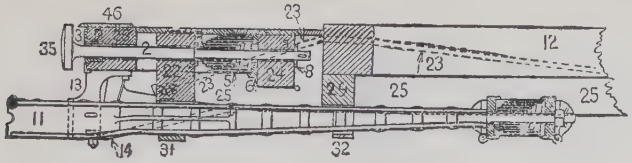


Fig. 284. Longitudinal Section.

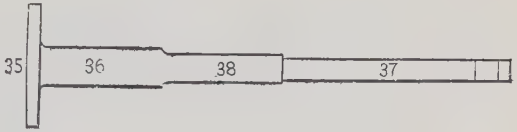


Fig. 287.
BUFFER-BAR.

Fig. 283. Side View.

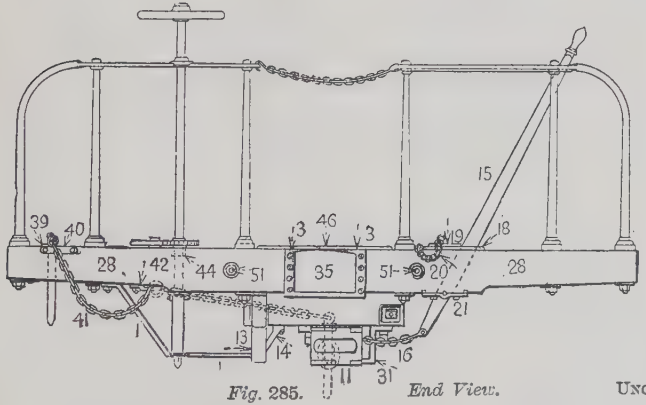


Fig. 285. End View.

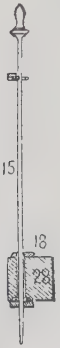


Fig. 286.
UNCOUPLING-LEVER.

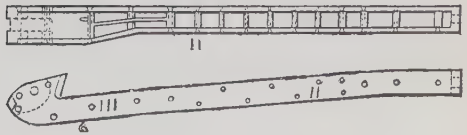


Fig. 289. Plan.
DRAW-BAR COUPLING-HOOK.

MILLER-PLATFORM.

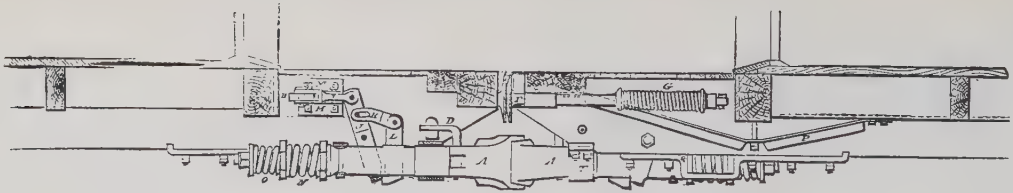


Fig. 290. Longitudinal Section.

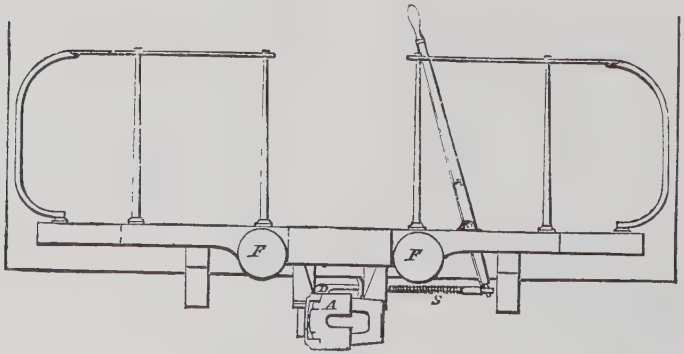


Fig. 291. End View.

JANNEY CAR-COUPLER.

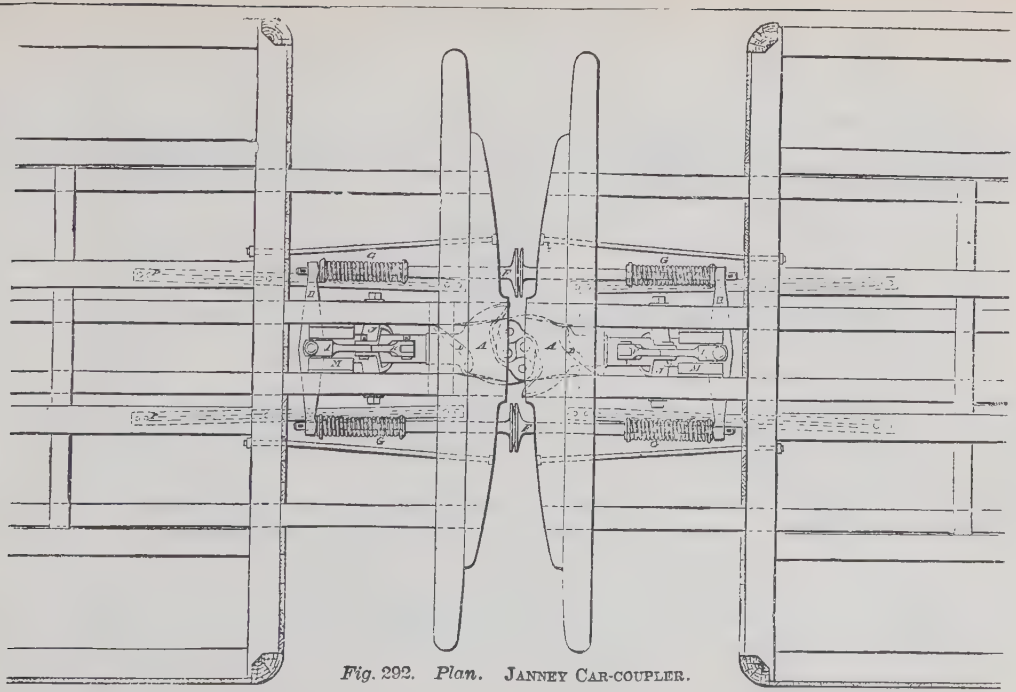


Fig. 292. Plan. JANNEY CAR-COUPLER.

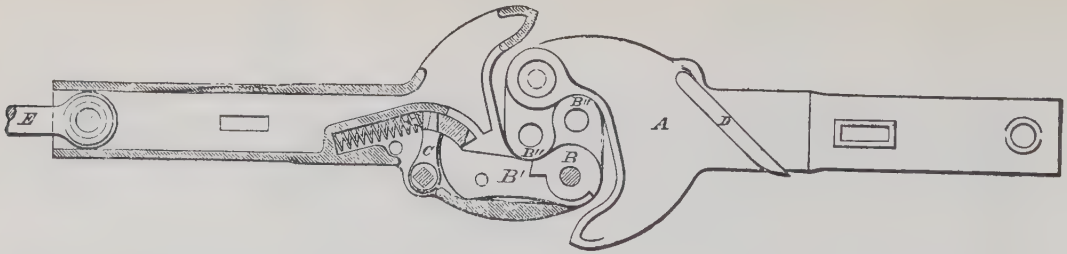


Fig. 293.
Plan of Draw-hooks in their Position when Coupled.

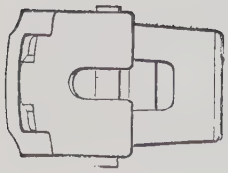


Fig. 295.
End View.

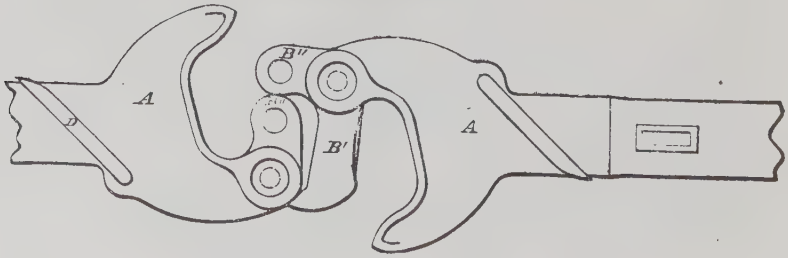


Fig. 294.
Plan of Draw-hooks in their Position when Uncoupled.

JANNEY CAR-COUPLER.

For list of names of the parts designated by the numbers in the engraving, see page 366.

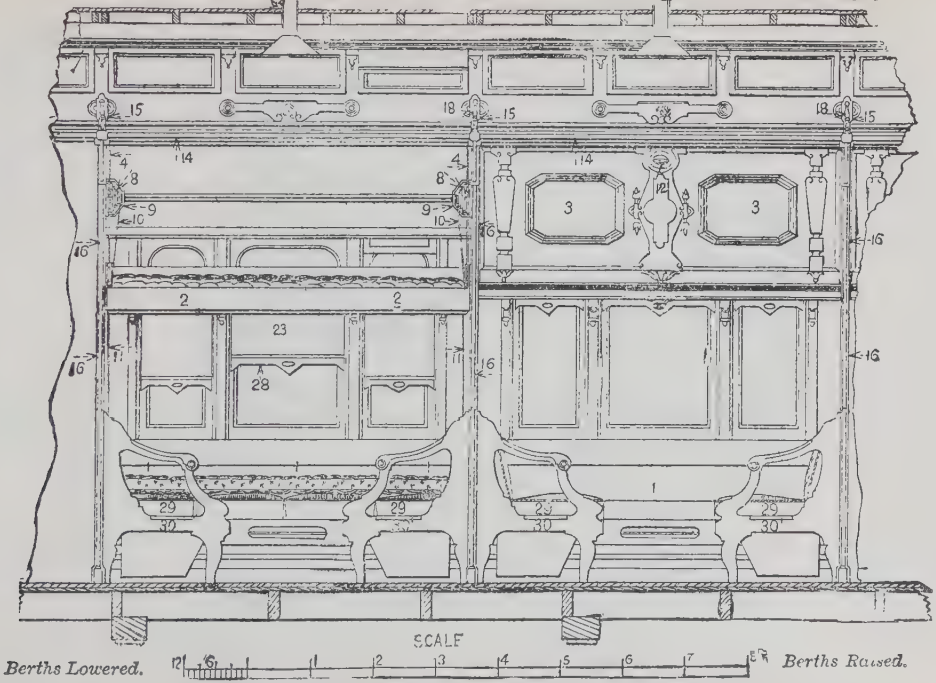
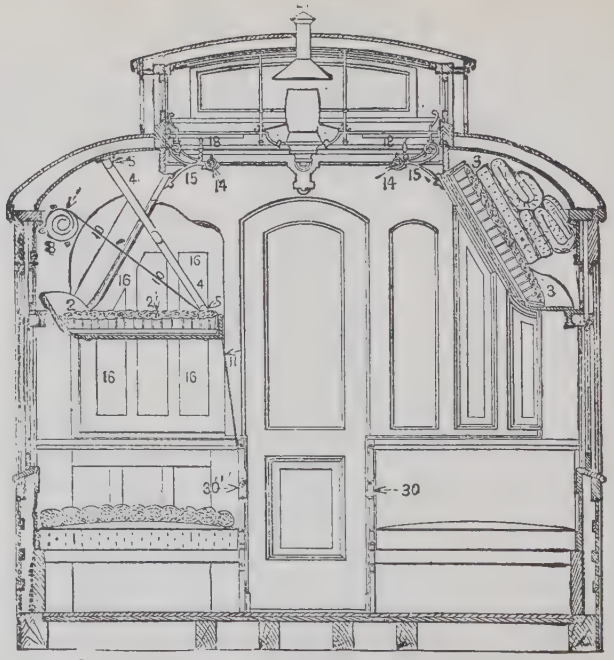


Fig. 296. LONGITUDINAL SECTION OF SLEEPING-CAR, SHOWING TWO SECTIONS.

SLEEPING-CARS.

LIST OF NAMES OF THE PARTS OF SLEEPING-CARS WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 296–298:

1. *Lower-berth.*
2. *Upper-berth.*
3. *Upper-berth, folded-up.*
4. *Berth-brace.*
5. *Berth-brace Eye.*
6. *Berth-chain.*
7. *Berth-chain Pulley.*
8. *Berth-spring.*
9. *Berth-spring Frame.*
10. *Berth-spring Rope.*
11. *Berth Safety-rope.*
12. *Berth-latch.*
12′. *Berth-latch Handle.*
13. *Berth-curtain.*
14. *Berth-curtain Rod.*
15. *Berth-curtain-rod Bracket.*
16. *Berth Head-board.*
17. *Head-board Bolt.*
18. *Hat-post.*
19. *Table-hook.*
20. *Table-hook Plate.*
21. *Window-lift.*
22. *Window-latch.*
23. *Window-curtain or Window-shade.*
24. *Inside Window-panel.*
25. *Ticket-holder.*
26. *Arm-rest.*
27. *Lamp-jack,*
28. *Window-curtain Leather.*
29. *Seat.*
30. *Right-hand Seat-end.*
30′. *Left-hand Seat-end.*



Berths Lowered. *Fig. 297.* *Berths Raised.*

TRANSVERSE SECTION OF SLEEPING-CAR.

For list of names of the parts designated by the numbers in the engraving, see page 366.

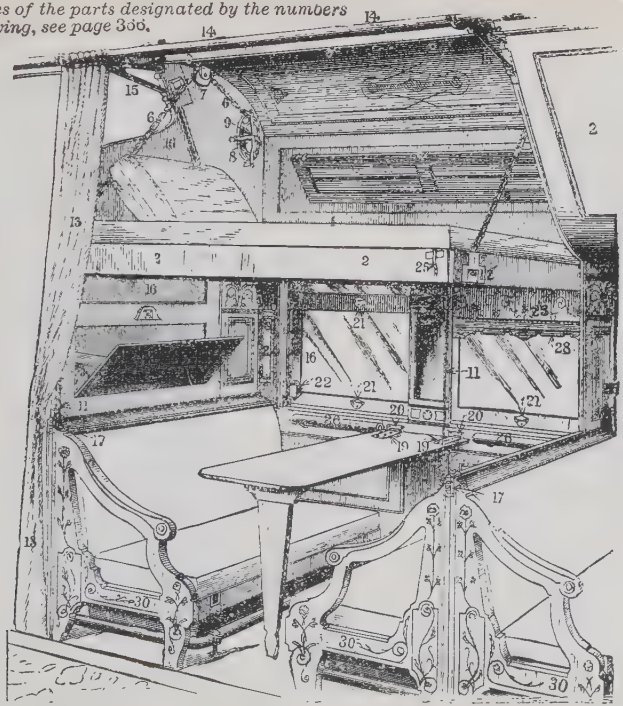


Fig. 298. PERSPECTIVE VIEW OF SECTION OF SLEEPING-CAR.

CAR-WINDOWS.

List of Names of the Parts of Car-windows which are designated by the numbers in Figs. 299–301:

1. *Truss-plank.*
2. *Lower Wainscot-rail.*
3. *Upper Wainscot-rail.*
4. *Wainscot-panel.*
5. *Inside Window-sill.*
6. *Window, or Window-glass.*
7. *Window-casing, or Inside Window-stop.*
8. *Window-moulding.*
9. *Window-moulding-joint Cover.*
10. *Window-moulding Base.*
11. *Window-stile.*
12. *Window-rail.*
13. *Window-blind Stile.*
14. *Window-blind Rail.*
15. *Window-blind Mullion.*
16. *Sash Parting-strip.*
17. *Upper Window-blind, and Window-blind Slat.*
18. *Lower Window-blind.*
19. *Window-blind Stop.*
21. *Window-lift.*
22. *Window-latch.*
23. *Window-latch Upper-stop.*
24. *Window-latch Lower-stop.*
25. *Upper Window-blind Lift.*
26. *Lower Window-blind Lift.*
27. *Window-curtain.*
27′. *Window-curtain, or Window-shade.*
28. *Lambrequin.*
29. *Window-curtain Holder.*
30. *Window-curtain Rod.*
31. *Window-curtain-rod Stanchion.*
32. *Window-curtain Rings.*
33. *Window-curtain Tassel.*
34. *Window-cornice.*
35. *Inside Window-panel.*
36. *Inside-cornice.*
37. *Inside-cornice Fascia-board.*
38. *Inside-cornice Sub-fascia-board.*
39. *Arm-rest.*
40. *Table-leg Hook.*
41. *Table-leg-hook Plate.*

For list of names of the parts designated by the numbers in the engravings, see page 366.

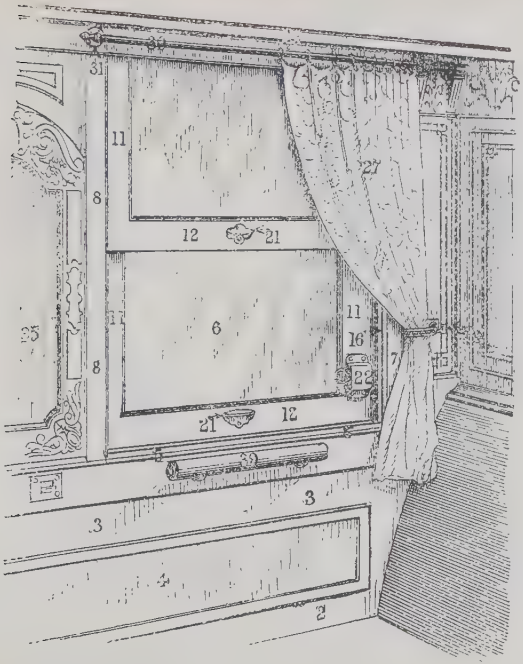


Fig. 299. PERSPECTIVE VIEW OF SLEEPING-CAR WINDOW.

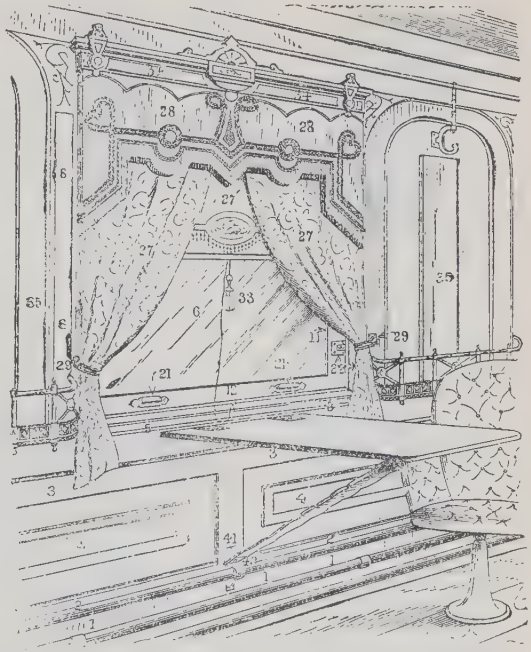


Fig. 300. PERSPECTIVE VIEW OF DRAWING-ROOM-CAR WINDOW.

For list of names of the parts designated by the numbers in the engraving, see page 368.

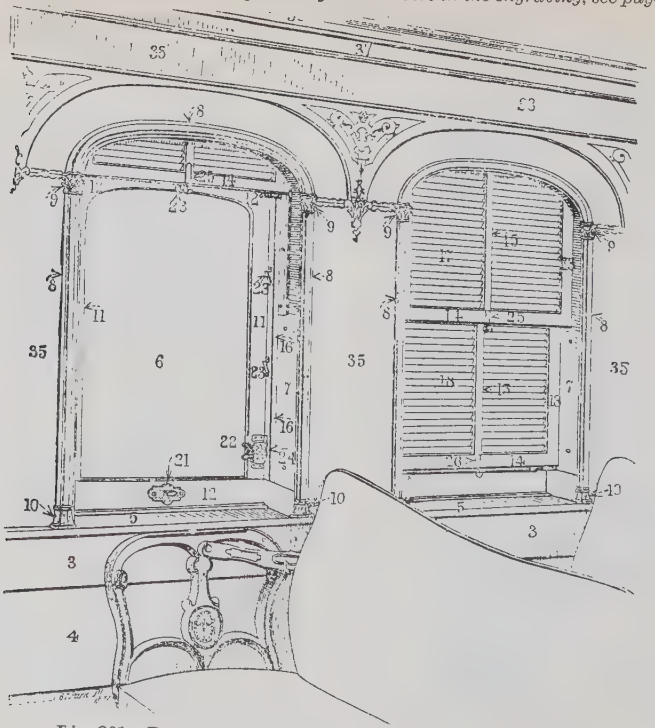


Fig. 301. PERSPECTIVE VIEW OF PASSENGER-CAR WINDOWS.

Fig. 302.
DOUBLE WINDOW-SASH SPRING.

Fig. 303.
SINGLE WINDOW-SASH SPRING.

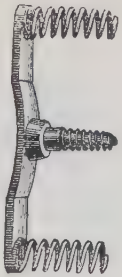


Fig. 304.
SPIRAL WINDOW-SASH SPRING.

Fig. 305.
SPRING WINDOW-HOLDER.

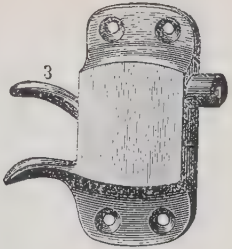


Fig. 308.
WINDOW-LATCH.

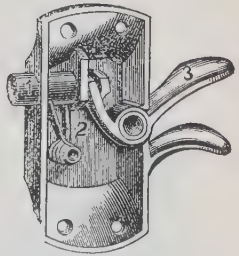


Fig. 309. WINDOW-LATCH.
Back View.
1. *Window-latch Bolt.*
2. *Window-latch Spring.*
3. *Window-latch Trigger.*

Fig. 306.
V WINDOW-BUTTON.

Fig. 307.
L WINDOW-BUTTON.

Fig. 310.
WINDOW-LATCH BUSHING.

Fig. 311.
WINDOW-LATCH STOP.

Fig. 313.
WINDOW-LATCH RACK.

Fig. 314.
WINDOW-LATCH PLATE.

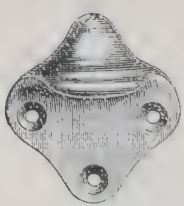


Fig. 316.
WINDOW-LIFT.

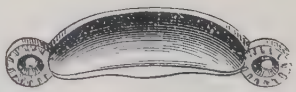


Fig. 317
WINDOW-LIFT.

Fig. 319.
WINDOW BAR-LIFT.

Fig. 312.
WINDOW-LATCH LOWER-STOP.

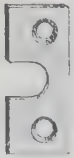


Fig. 315.
WINDOW-LATCH PLATE.

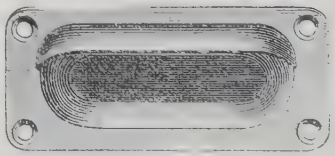


Fig. 318.
FLUSH WINDOW-LIFT.

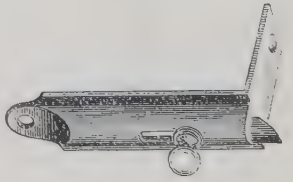


Fig. 320.
WINDOW-BLIND BOLT.

Fig. 321.
SINGLE WINDOW-BLIND LIFT.

Fig. 322.
SINGLE WINDOW-BLIND LIFT.

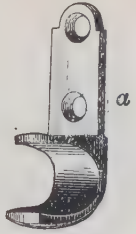


Fig. 323.
LOWER WINDOW-BLIND LIFT.

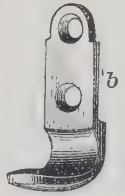


Fig. 324.
UPPER WINDOW-BLIND LIFT.

Fig. 325.
DOUBLE WINDOW-BLIND LIFT

Fig. 331.
CLEAR-STORY WINDOW-LATCH KEEPER.

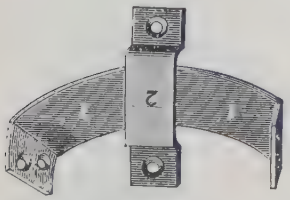


Fig. 326.
CLEAR-STORY WINDOW-SECTOR AND CLAMP.
1. *Sector.* 2. *Clamp.*

Fig. 327.
CLEAR-STORY WINDOW-PIVOT.

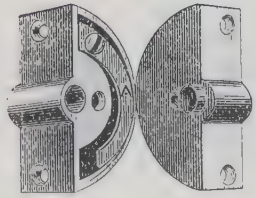


Fig. 329.
WINDOW-PIVOT PLATE.

Fig. 328.
WINDOW-PIVOT.

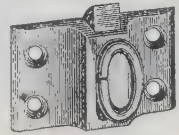


Fig. 330.
CLEAR-STORY WINDOW-LATCH.

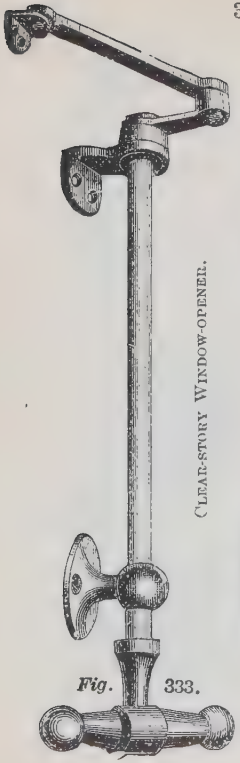


Fig. 333.

CLEAR-STORY WINDOW-OPENER.

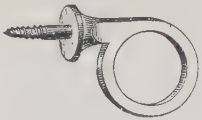


Fig. 332.
PULL-RING, OR CLEAR-STORY WINDOW-PULL.

Fig. 335.
WINDOW-CURTAIN RING.

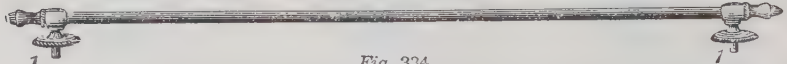


Fig. 334.
WINDOW-CURTAIN ROD.
1. *Window-curtain-rod Stanchion.*

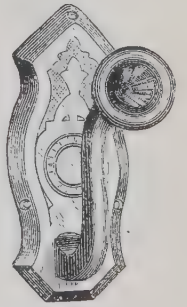


Fig. 340.
WINDOW-CURTAIN HOLDER.

Fig. 336.
WINDOW-CURTAIN PULLEYS.

Fig. 337.
WINDOW-CURTAIN-ROLLER BEARINGS.

Fig. 338.
WINDOW-CURTAIN BRACKET.

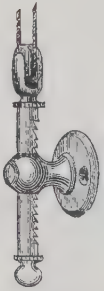


Fig. 339.
WINDOW-CURTAIN-CORD TIGHTENER.

Fig. 341.
WINDOW-MOULDING-JOINT COVER.

Fig. 342.
VENTILATOR-RING.

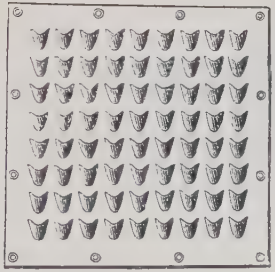


Fig. 343.
FRIEZE-VENTILATOR PLATE.

Fig. 344.

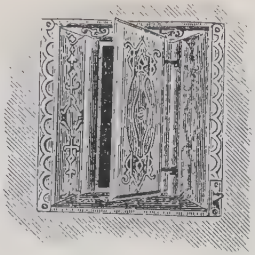


Fig. 345.
VENTILATOR-DOOR.

VENTILATOR-STAFF.

Fig. 348½.

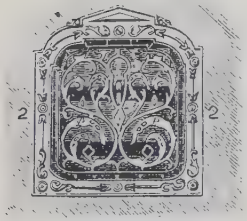


Fig. 346.
FRIEZE-VENTILATOR REGISTER.

1. *Register-handle.*
2. *Register-frame.*
3. *Register valve.*
4. *Register-face.*

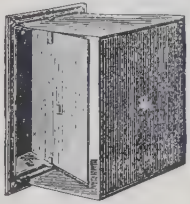


Fig. 347.
VENTILATOR-HOOD.

1. *Ventilator-deflector.*
2. *Ventilator-hood.*

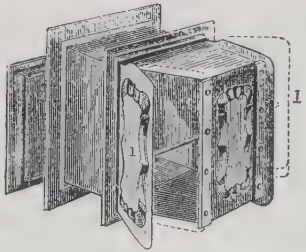


Fig. 348.
AUTOMATIC VENTILATOR

1. *Ventilator-deflector.*
2. *Ventilator-hood.*

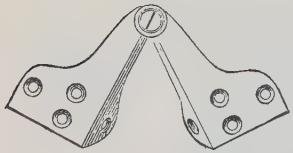


Fig. 349.
SEAT-HINGE.

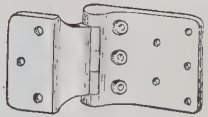


Fig. 351.
FAST BERTH-HINGE.

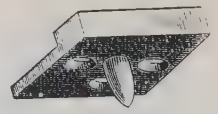


Fig 355.
UPPER-BERTH-REST PIVOT.

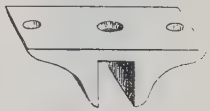


Fig. 354.
UPPER-BERTH REST

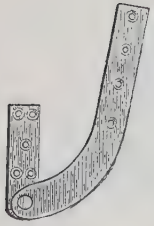


Fig. 350.
SOFA-HINGE.

Fig. 353.
LOOSE BERTH-HINGE BUSHING.

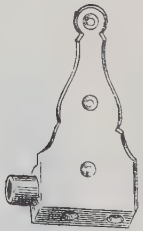


Fig. 352.
LOOSE BERTH-HINGE.

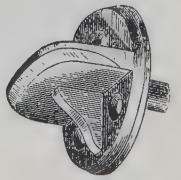


Fig. 356.
UPPER-BERTH BRACKET.

Fig. 357.
BERTH-LATCH HANDLE.
1. *Berth-latch Face-plate.*

Fig. 358.
BERTH-LATCH BOLT.

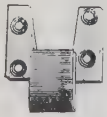


Fig. 359.
BERTH-LATCH KEEPER.

Fig. 360.
BERTH-NUMBER.

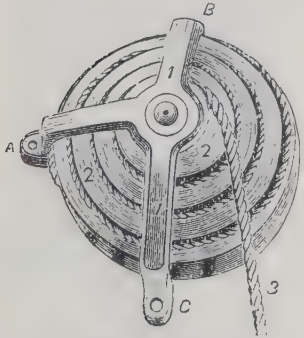


Fig. 361. BERTH-SPRING.
1. *Berth-spring Frame.*
2. *Berth-spring Fusee.*
3. *Berth-spring Rope.*

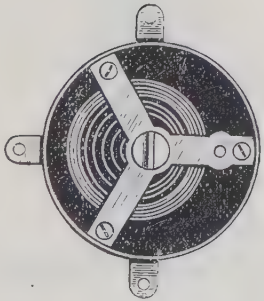


Fig. 362.
BERTH-SPRING.
Back View.

Fig. 363.
BERTH SAFETY-ROPE FASTENER.

Fig. 364.
BERTH SAFETY-ROPE HOLDER.

Fig. 365.
HEAD-BOARD-COUPLING HASP.

Fig. 366.
HEAD-BOARD-COUPLING KEEPER.

Fig. 367.
HEAD-BOARD BOLT.

Fig. 368.
HEAD-BOARD BUSHINGS.

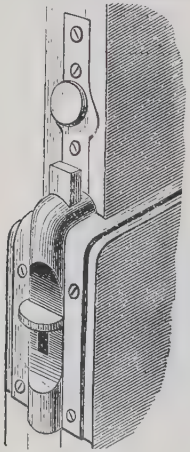


Fig. 369.
HEAD-BOARD BOLT.

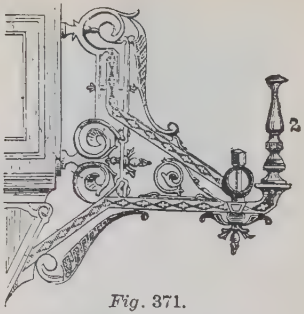


Fig. 371.
BERTH-CURTAIN-ROD BRACKET.
1. *Berth-curtain-rod Coupling.*
2. *Hat-post.*

Fig. 372.
BERTH-CURTAIN-ROD TIP.

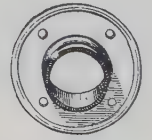


Fig. 373.
BERTH-CURTAIN-ROD BUSHING, OR SOCKET.

Fig. 375.
MIRROR AND MIRROR-SASH.

Fig. 374.
BERTH-CURTAIN HOOK.

Fig. 376.
MIRROR-SASH HOLDER.

Fig. 378.
TOWEL-ROD.

Fig. 379.
TOWEL-ROD.

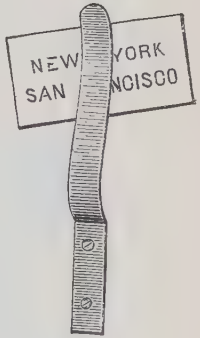


Fig. 377.
TICKET-HOLDER.

Fig. 380.

TOWEL-ROLLER AND BRACKET.

1 *Towel-roller.* 2. *Towel-rolier Bracket.*

Fig. 383.

Fig. 384.

BASIN-PLUG AND FIXTURES.

1. *Basin-coupling.*
2. *Basin-coupling.*
3 *Basin-chain Holder.*
4. *Basin-chain.*
5. *Basin-plug.*

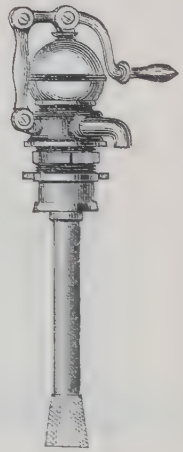


Fig. 381.

WASH-ROOM PUMP.

Fig. 382.

VERTICAL-TELEGRAPH, OR LEVER-FAUCET OR COCK.

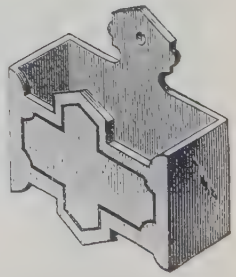


Fig. 385.

BRUSH AND COMB RACK.

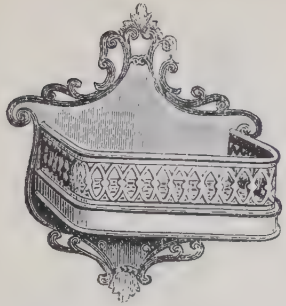


Fig. 386.
SOAP-HOLDER.

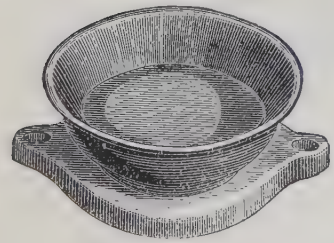


Fig. 387.
SOAP-DISH.

Fig. 388.
SPITTOON.

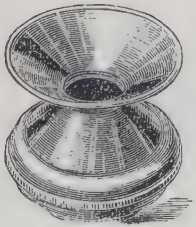


Fig. 389.
CUSPADOR.

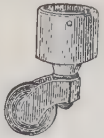


Fig. 390.
CHAIR OR SOCKET CASTER.

Fig. 391.
SOFA-CASTER.

Fig. 392.
CHAIR-LEG SOCKET.

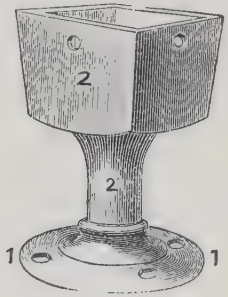


Fig. 393.
REVOLVING-CHAIR STAND.

1. *Revolving-chair-stand Base.*
2. *Revolving-chair-stand Socket*

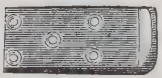


Fig. 394.
TABLE-HOOK.

Fig. 395
TABLE-HOOK PLATE.

Fig. 396.
SEAT-LEG PLATE.

Fig. 397.

Fig. 398.
DOOR-SHEAVES AND HOLDERS.
1. *Door-sheave Holder.* 2. *Door-sheave.* 3. *Door-track.*

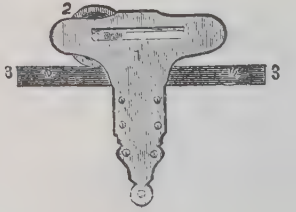


Fig. 399.

CAR-SEATS.

LIST OF NAMES OF THE PARTS OF CAR-SEATS WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 400 AND 401 :

1. *Seat-rail.*
2. *Seat-end, Aisle Seat-end, or Short Seat-end.*
3. *Seat-end, Long Seat-end, or Iron Seat-end.*
4. *Wall Seat-end.*
5. *Seat-arm.*
6. *Seat-stand.*
7. *Foot-rest.*
8. *Movable Foot-rest.*
9. *Foot-rest Carrier.*
10. *Heater-pipe Casing, or Side Foot-rest.*
11. *Seat-back.*
12. *Seat-back Band.*
13. *Seat-back Arm.*
14. *Seat-back Stop.*
15. *Seat-lock*
16. *Arm-cap.*
17. *Cushion-frame.*
18. *Seat-spring.*

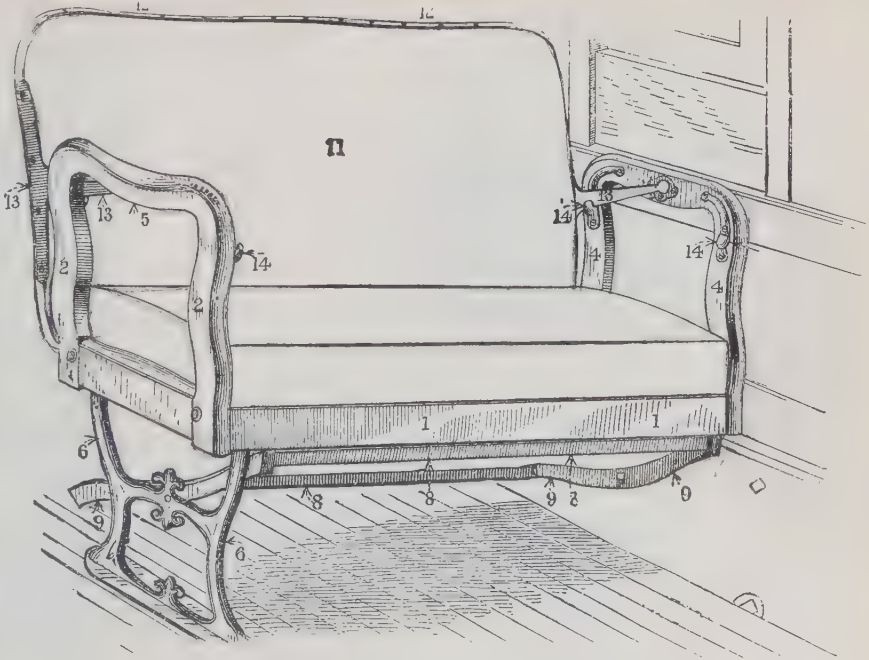


Fig. 400. CAR-SEAT, WITH WOODEN ENDS. *Perspective View.*

For list of names of the parts designated by the numbers in the engraving, see page 385.

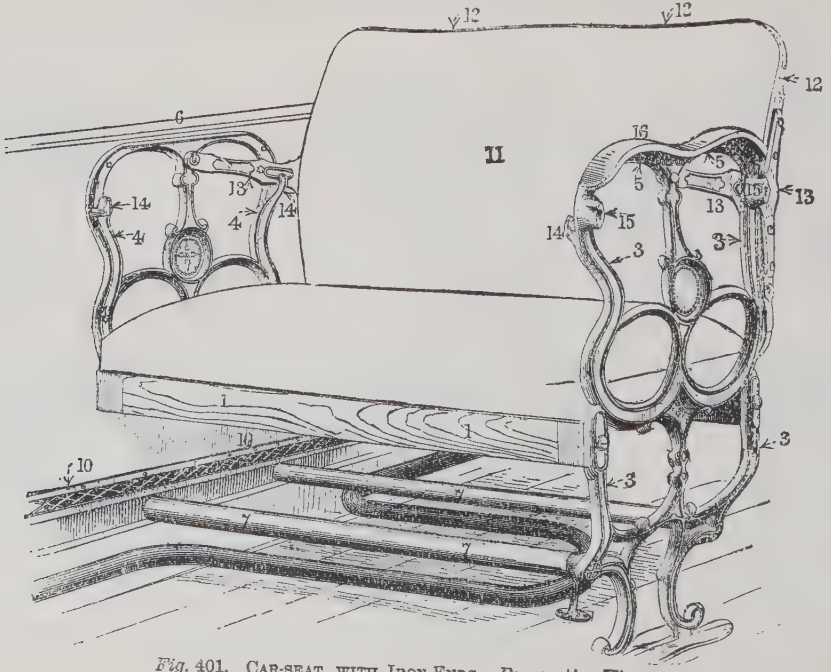


Fig. 401. CAR-SEAT, WITH IRON ENDS. *Perspective View.*

For list of names of the parts designated by the numbers in the engravings, see page 383.

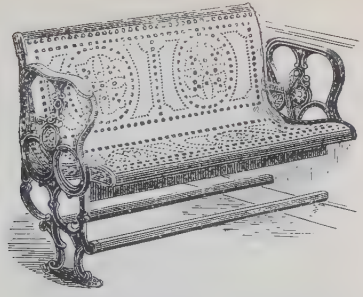


Fig. 402. PERFORATED-VENEER CAR-SEAT.

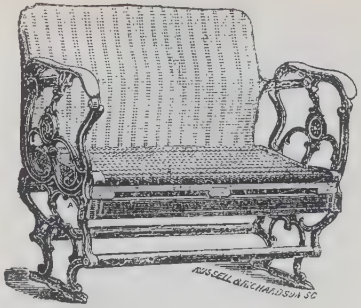


Fig. 403. RATTAN CAR-SEAT.

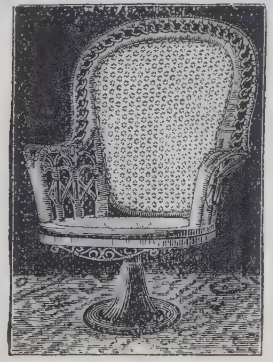


Fig. 404. CANE-SEAT REVOLVING-CHAIR.

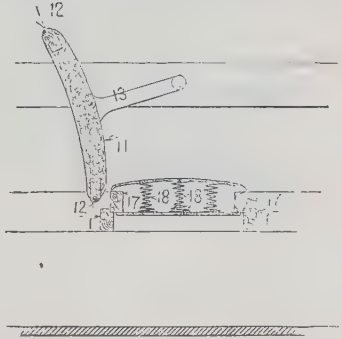


Fig. 405. SECTION OF CAR-SEAT AND BACK.

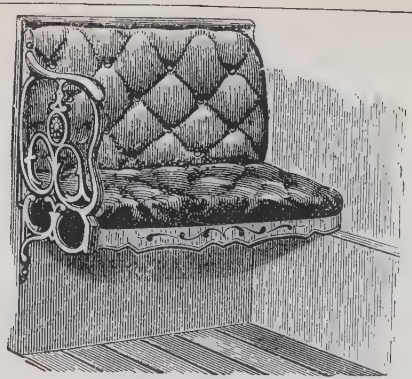


Fig. 406.
RIGHT-HAND CORNER-SEAT.

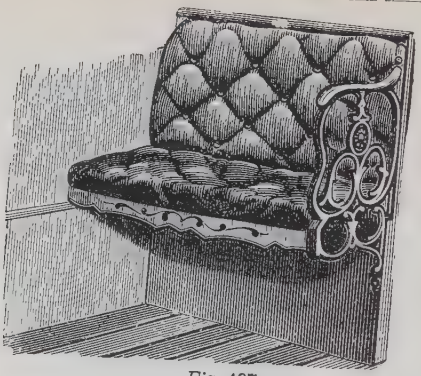


Fig 407.
LEFT-HAND CORNER-SEAT.

Fig. 408.
RIGHT-HAND SEAT-END.

Fig. 410.
ARM-CAP.

Fig. 409.
LEFT-HAND SEAT-END.

Fig. 411.
ELLIPTIC SEAT-SPRING.

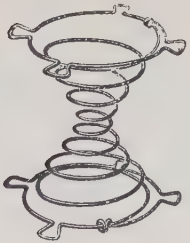


Fig. 412.
SPIRAL SEAT-SPRING.

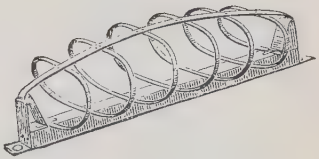


Fig. 413.
SPIRAL-ELLIPTIC SEAT-SPRING.

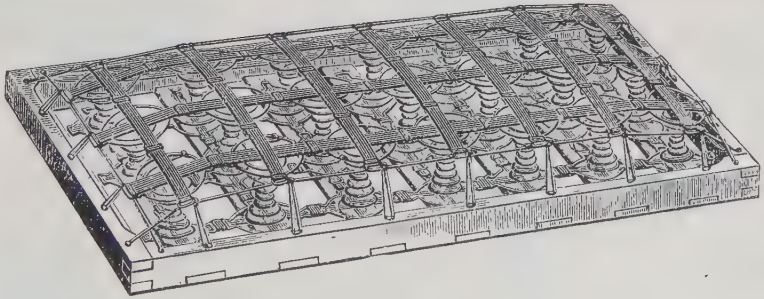


Fig. 414.
CUSHION-FRAME AND SEAT-SPRINGS.

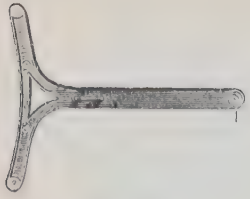


Fig. 415.
SEAT-BACK ARM.
1. *Seat-back-arm Washer.*

Fig. 416.
SEAT-BACK ARM-PIVOT.

Fig. 417.
SEAT-BACK-ARM PLATE.

Fig. 418.
SEAT-BACK-ARM PIVOT-PLATE.

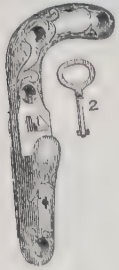


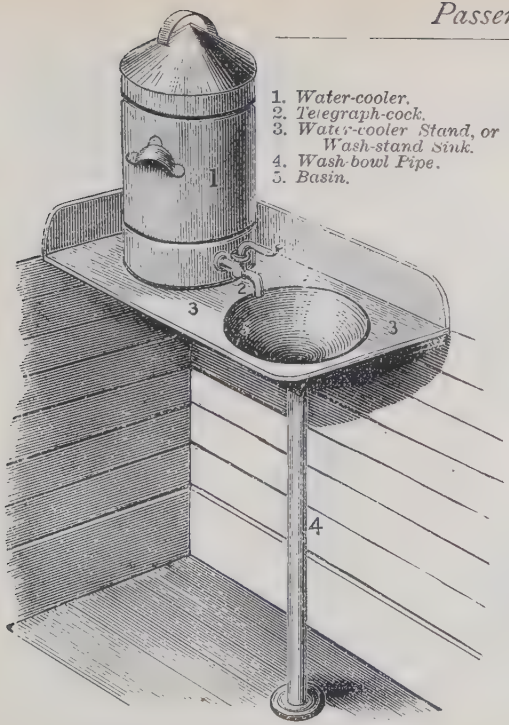
Fig. 419.
SEAT-BACK STOP.
1. *Seat-lock Bolt.*
2. *Seat-lock Key*

Fig. 420.
SEAT-BACK CURVED-STOP.

Fig. 421.
SEAT-BACK ROUND-STOP

Fig. 422.
BARREL SEAT-LOCK.
1. *Seat-lock Bolt.*
2. *Seat-lock Spring.*

Fig. 423.
SEAT-LOCK ESCUTCHEON.



1. *Water-cooler.*
2. *Telegraph-cock.*
3. *Water-cooler Stand, or Wash-stand Sink.*
4. *Wash-bowl Pipe.*
5. *Basin.*

Fig. 424. WATER-COOLER AND BASIN.

Fig. 425.
CUP OR TUMBLER HOLDER.

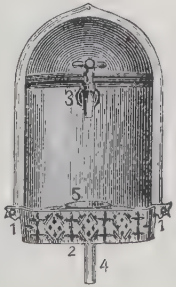


Fig. 426.
WATER-ALCOVE.

1. *Water-alcove Front.*
2. *Water-alcove Pan or Bottom.*
3. *Alcove-faucet.*
4. *Water-drip Pipe.*
5. *Alcove Cup-holder.*

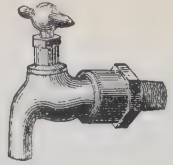


Fig. 427.
SELF-CLOSING FAUCET.

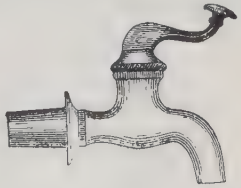


Fig. 428.
HORIZONTAL TELEGRAPH COCK OR FAUCET.

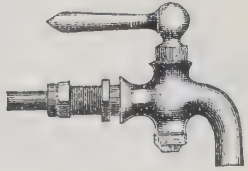


Fig. 429. BIBB-COCK.

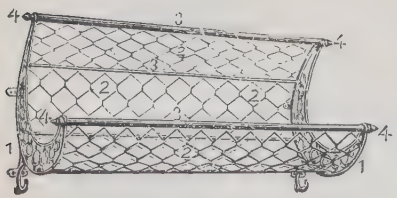


Fig. 430.

BASKET-RACK.

1. *Basket-rack Bracket.*
2. *Basket-rack Netting.*
3. *Basket-rack Rod.*
4. *Basket-rack Tip.*

Fig. 431.

DRAWER-PULL.

Fig. 432.

MATCH-STRIKER.

Fig. 433.

MATCH-STRIKER FRAME.

Fig. 435.

DROP-LETTER-BOX PLATE.

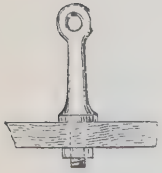


Fig. 436.

STANCHION.

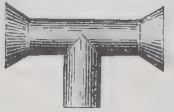


Fig. 437.

WATER-CLOSET VENTILATING JACK.

Fig. 438.

CORNER-URINAL.

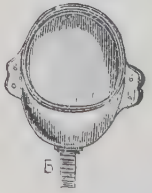


Fig 439.

SIDE-URINAL.

B. Urinal-pipe.

Fig. 440.

SOIL-HOPPER.

Fig. 441.
WATER-CLOSET DOOR-PLATE.

Fig. 444.
COAT-HOOK.

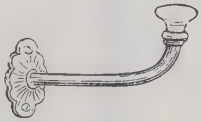


Fig. 445.
HAT-HOOK.

Fig. 448.
HEAD-LINING NAILS.
(*Full size.*)

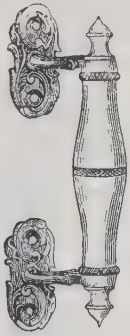


Fig. 442.
SIDE URINAL-HANDLE.

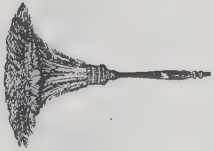


Fig. 449.
FEATHER-DUSTER.

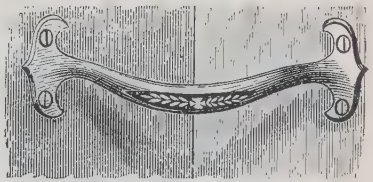


Fig. 443.
CORNER URINAL-HANDLE.

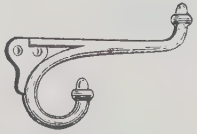


Fig. 446.
COAT AND HAT HOOK.

Fig. 447.
HAT-POST AND HOOK.

LIST OF NAMES OF PARTS OF BELL-CORD FIXTURES WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 450–465.

1. *Bell-cord Pulley.*
2. *Bell-cord Strap.*
3. *Bell-cord Strap-hanger Bracket.*
4. *Bell-cord Guide.*

Fig. 450
BELL-CORD FIXED-HANGER.

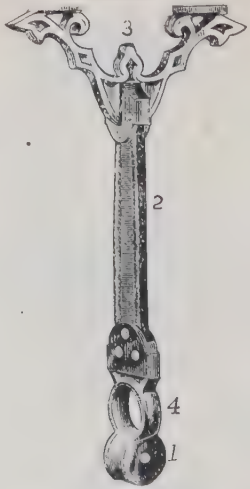


Fig. 451.
BELL-CORD STRAP-HANGER.

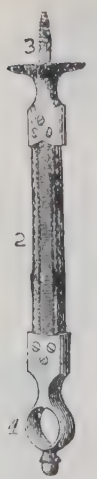


Fig. 452.
BELL-CORD STRAP-HANGER.

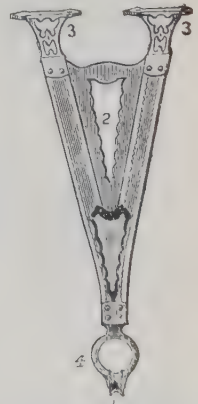


Fig. 453.
BELL-CORD DOUBLE STRAP-HANGER.

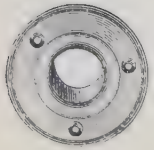


Fig. 454.
BELL-CORD BUSHING.

Fig. 455.
BELL-CORD BUSHING, *with Pulley.*

Fig. 456.
BELL-CORD BEVELED-BUSHING.

Fig. 457.
BELL-CORD GUIDE, *with Flange.*

Fig. 458.
BELL-CORD GUIDE, *with Flange and Pulley.*

Fig. 459.
BELL-CORD GUIDE, *with Flange and Side-pulley.*

For list of names of the parts designated by the numbers in the engravings, see page 392.

Fig. 460.
BELL-CORD GUIDE,
with Two Pulleys.

Fig. 461.
BELL-CORD GUIDE,
with Four Pulleys.

Fig. 462.
BELL-CORD GUIDE,
with Screw.

Fig. 463.
BELL-CORD GUIDE,
with Screw and Pulley.

Fig. 464.
BELL-CORD GUIDE,
with Side-pulley and Screw-top.

Fig. 465.
BELL-CORD GUIDE,
with Centre-pulley.

Fig. 466.
BELL-CORD-GUIDE WASHER.

Fig. 467.
BELL-CORD COUPLING.

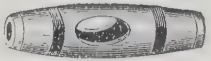


Fig. 468.
BELL-CORD SPLICE.

Fig. 469.
BELL-CORD END-HOOK.

LAMPS.

List of Names of the Parts of Lamps, etc., which are Designated by the Numbers in Figs. 470–496.

1. *Lamp-stay.*
2. *Lamp-shade.*
3. *Lamp-globe Chimney.*
4. *Lamp-arms.*
5. *Lamp-ring,*
6. *Lamp-reservoir*
7. *Globe-holder.*
8. *Lamp-burner.*
9-9. *Drop of Lamp.*
10. *Lamp-chimney.*
11. *Lamp-chimney Holder.*
12. *Lamp-chimney Bracket.*
13. *Smoke-bell.*
4. *Lamp-reflector.*
15. *Lamp-chimney Reflector.*
16. *Side-lamp Holder.*
17. *Side-lamp Bracket.*
18. *Side-lamp Braces.*
20. *Lamp-bottom.*
21. *Candle-holder Cap.*
22. *Candle-holder Cup.*
23. *Candle-rods.*
24. *Candle-spring.*
25. *Alcove-lamp Reflector.*
26. *Bull's-eye.*
27. *Alcove-lamp.*

For list of names of the parts designated by the numbers in the engravings, see page 394.

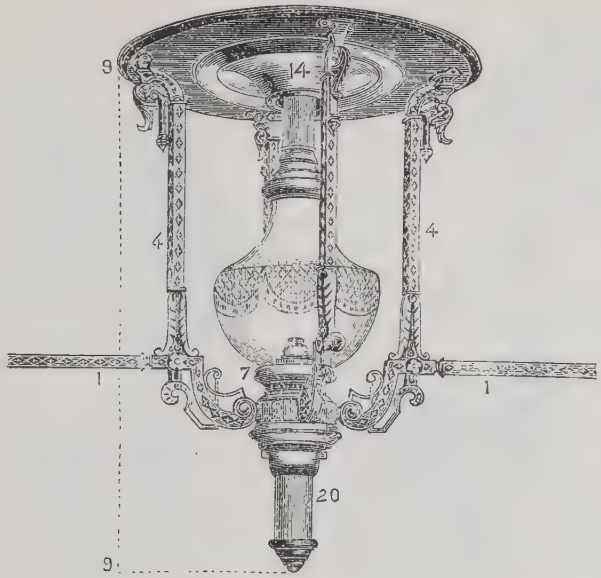


Fig. 470.
CENTRE-LAMP.

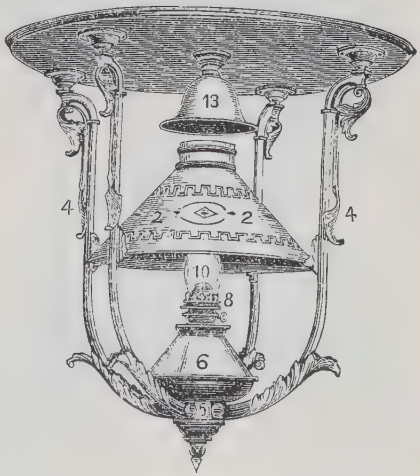


Fig. 471.
CENTRE-LAMP.

For list of names of the parts designated by the numbers in the engravings, see page 394.

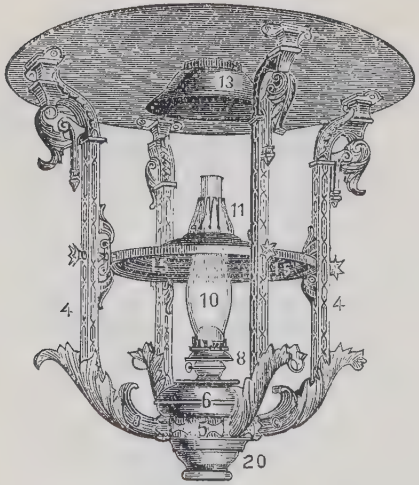


Fig. 472.
CENTRE-LAMP.

Fig. 473.
(See fig. 475.)

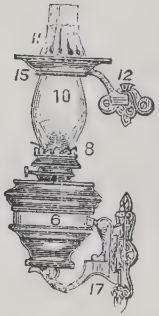


Fig. 474.
SIDE-LAMP.

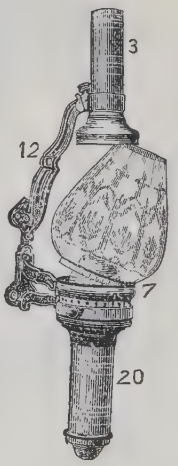


Fig. 475.
SIDE-LAMP,
with Adjustable or Loose Globe.

For list of names of the parts designated by the numbers in the engravings, see page 394.

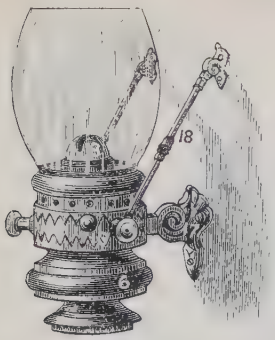


Fig. 476. SIDE-LAMP, *with Braces.*

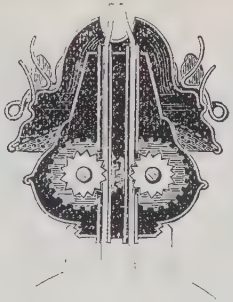


Fig. 478. DUAL-BURNER

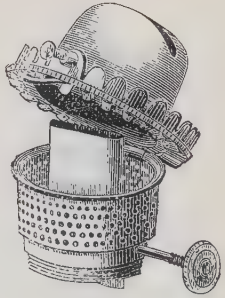


Fig. 480. HINGE-BURNER.

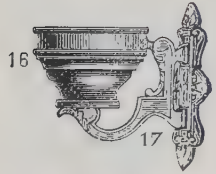


Fig. 477.
SIDE-LAMP HOLDER AND BRACKET.

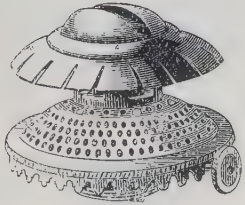


Fig. 479.
SUN-BURNER.

Fig. 481.
SCREW-BURNER.

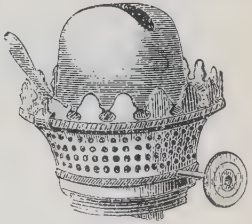


Fig. 482.
SPRING-BURNER.

For list of names of the parts designated by the numbers in the engravings, see page 394.

Fig. 483.
LAMP-BOTTOM FOR MINERAL-OIL.

Fig 484.
LAMP-BOTTOM FOR LARD-OIL.

Fig. 487.
LAMP-GLOBE.

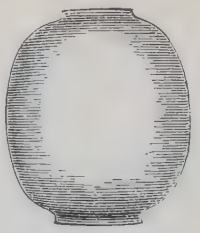


Fig. 488.
MELON-SHAPED LAMP-GLOBE.

Fig. 485.
LAMP-BOTTOM FOR CANDLES.

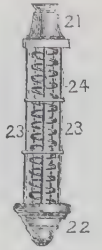


Fig. 486.
CANDLE-HOLDER.

Fig. 489.
EGG-SHAPED LAMP-GLOBE.

Fig. 490.
PEAR-SHAPED LAMP-GLOBE.

For list of names of the parts designated by the numbers in the engravings, see page 394.

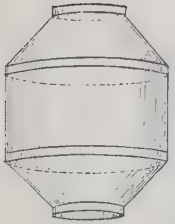


Fig. 491.
DOUBLE-CONE-SHAPED LAMP-GLOBE.

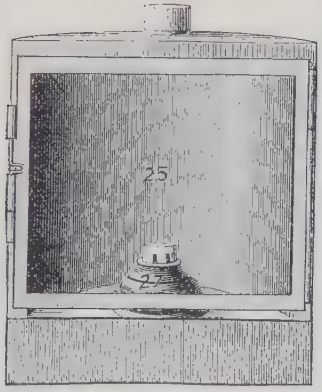


Fig. 492.
LAMP-ALCOVE AND LAMP.

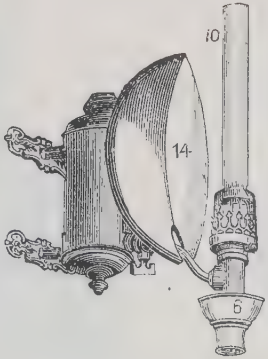


Fig. 493.
MAIL-CAR LAMP.

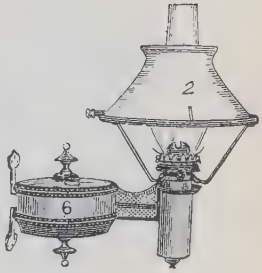


Fig. 494.
POST-OFFICE-CAR LAMP.

For list of names of the parts designated by the numbers in the engravings, see page 394.

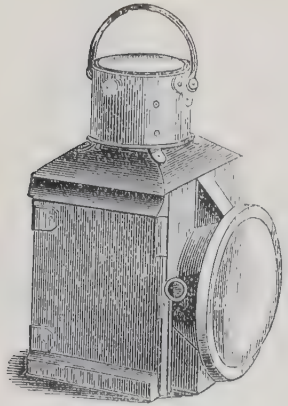


Fig. 495.
TRAIN-SIGNAL, TAIL, OR BULL'S-EYE LAMP.

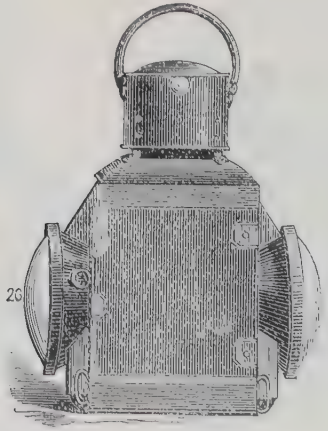


Fig. 496.
DOUBLE-LENS, TAIL, BULL'S-EYE, OR SIGNAL LAMP.

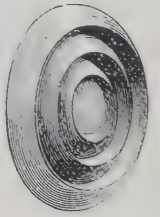


Fig. 497.
Front View.

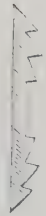


Fig. 498.
Section.

FRESNEL-LENS.

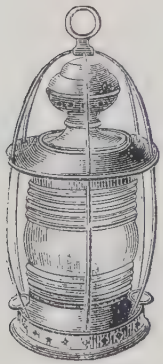


Fig. 499.
FRESNEL SIGNAL-LANTERN.

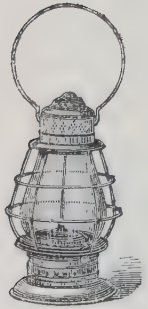


Fig. 500.
RAILROAD-LANTERN.

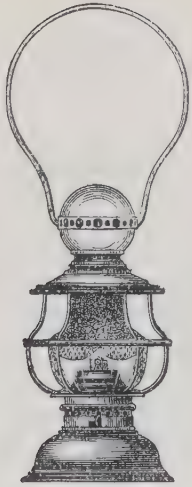


Fig. 501.
CONDUCTOR'S-LANTERN.

DOORS AND DOOR-FURNISHINGS

LIST OF NAMES OF THE PARTS OF DOORS, ETC., WHICH ARE DESIGNATED BY THE NUMBERS IN FIG. 502:

1. *Door-post or Jamb.*
2. *Door-mullion.*
3. *Door Name-plate.*
4. *Top Door-rail.*
5. *Bottom Door-rail.*
6. *Middle or Lock Door-rail.*
7. *Parting Door-rail.*
8. *Door-stile.*
10. *Lower or Twin Door-panels.*
11. *Middle Door-panel.*
12. *Upper Door-sash.*
13. *Lower Door-sash.*
14. *Door-sash Bolt.*
15. *Door-sash Plate.*
16. *Door-hinge.*
17. *Door-knob.*
18. *Door-lintel.*
19. *Door-lock.*
20. *Door-lock Keeper.*

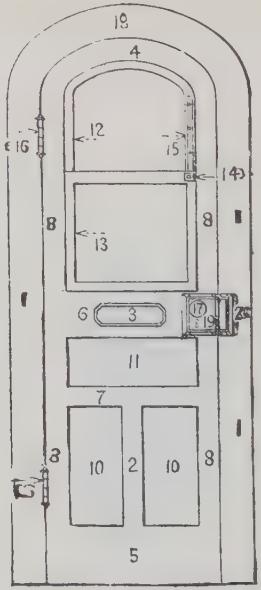


Fig. 502.
PASSENGER-CAR DOOR.

Fig. 503.
NOTICE-PLATE.

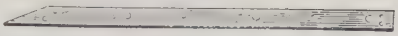


Fig. 504.
DOOR-SASH PLATE.

Fig 505.
DOOR-SASH BOLT.

Fig. 506.
DOOR-STOP.

Fig. 507.
DOOR-HOLDER.

Fig. 508.
DOOR-HOLDER CATCH.

Fig. 509.
FAST-JOINT BUTT-HINGE.

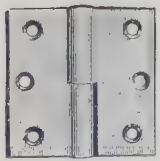


Fig. 510.
LOOSE-JOINT BUTT-HINGE

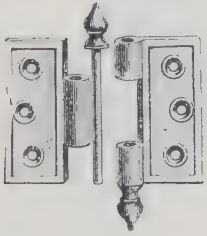


Fig. 511.
LOOSE-PIN BUTT-HINGE.

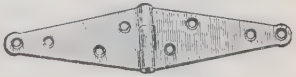


Fig. 512.
STRAP-HINGE.

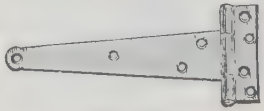


Fig. 513.
T-HINGE.

Fig. 514.
SQUARE DOOR-BOLT.

Fig. 515.
SQUARE-NECK-DOOR-BOLT.

Fig. 516.
BARREL DOOR-BOLT.
1. *Door-bolt Keeper.*

Fig 517.
FLUSH DOOR-BOLT.

Fig. 518.
DOOR-BUTTON.

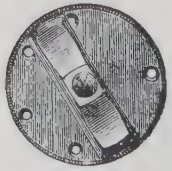


Fig. 519.
DOOR-BUTTON AND PLATE.

Fig. 520.
DOOR-PULL.

Fig. 521.
DOOR-PULL.

LOCKS.

LIST OF NAMES OF THE PARTS OF LOCKS WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 522–531.

1. *Door-latch Bolt.*
2. *Door-latch Hook.*
3. *Door-latch-hook Keeper.*
4. *Door-latch Rose.*
5. *Door-knob.*
6. *Sliding-door Handle.*
7. *Door-lock Bolt.*
8. *Door-lock Keeper.*
9. *Door-latch Keeper.*
10. *Door-latch Spindle.*

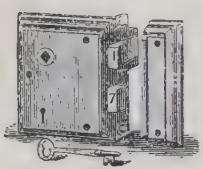


Fig. 522.
CAR-DOOR LOCK.

Fig. 523.
RIM-LOCK OR DEAD-LOCK.

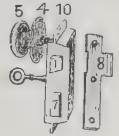


Fig. 524.
RABBETED-LOCK.

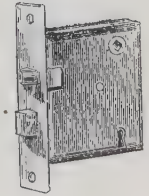


Fig. 525.
MORTISE-LOCK.

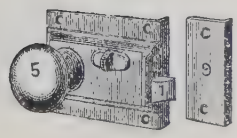


Fig. 526.
WATER-CLOSET LATCH.

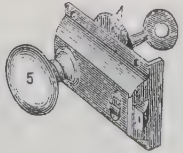


Fig. 527.
SPRING DOOR-LATCH, OR NIGHT-LATCH.

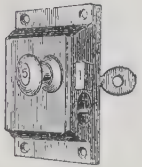


Fig. 528.
BAGGAGE-CAR DOOR-LOCK.

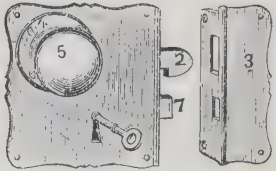


Fig. 529.
SLIDING-DOOR LOCK.

For list of names of the parts designated by the numbers in the engravings, see page 405.

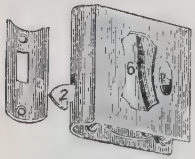


Fig. 530.
SLIDING-DOOR LATCH.

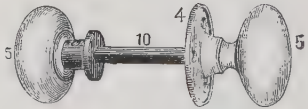


Fig. 531.
DOOR-SPINDLE AND KNOBS.

Fig. 532.
FLUSH DOOR-HANDLE.
(*Same as fig.* 357.)

Fig. 533.
DOOR-LATCH ROSE AND ESCUTCHEON.

Fig. 534. *Fig.* 535.
ESCUTCHEONS.

Fig. 536.
PADLOCK.

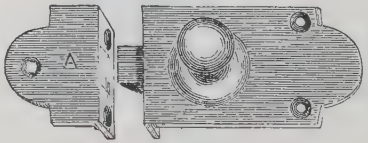


Fig. 537.
CUPBOARD-CATCH, OR FLUSH-BOLT.

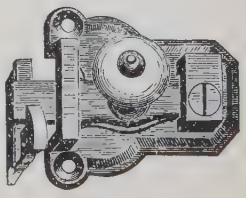


Fig. 538.
CUPBOARD-LATCH.

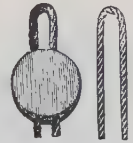


Fig. 540.
LEAD-SEAL AND SEAL-WIRE.

Fig. 539.
LEAD-SEAL.

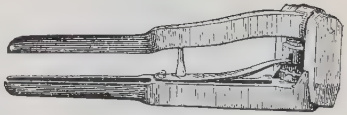


Fig. 541.
SEAL-PRESS.

Fig. 542.
SEAL-HOOK.

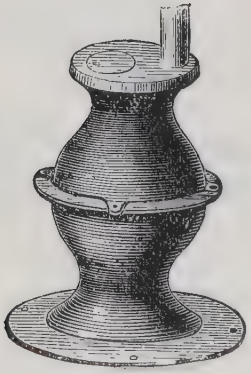


Fig. 543.
EGG-SHAPED STOVE.

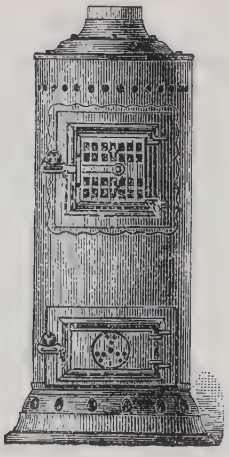


Fig. 544.
CYLINDRICAL-STOVE.

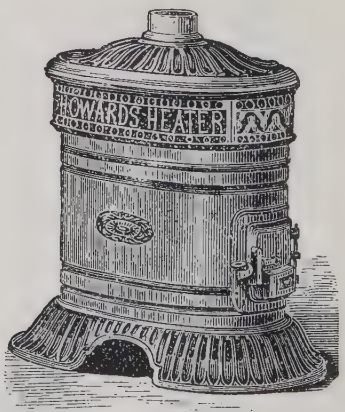


Fig. 545.
HOWARD-STOVE.

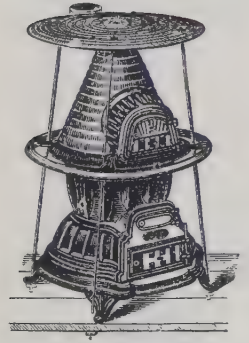


Fig. 546.
CHILSON CAR-STOVE.

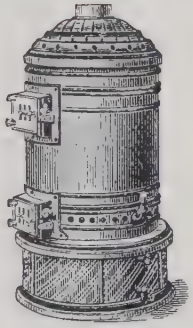


Fig. 547.
WINSLOW CAR-STOVE.

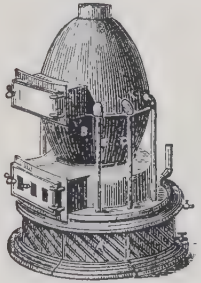


Fig. 548.
WINSLOW CAR-STOVE.
Inside.

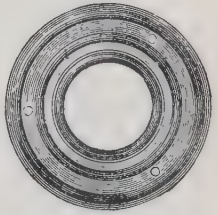


Fig. 549.
STOVE-RING.

SPEAR-HEATERS.

List of Names of the Parts of Spear-heaters which are Designated by the Numbers in Figs. 550–554:

1. *Hood.*
2. *Cold-air Pipe.*
3. *Hot-air Pipe.*
4. *Smoke-pipe.*
5. *Smoke-pipe Cap or Jack.*
6. *Deck-collar.*
7. *Screen, for Hood.*
8. *Smoke-pipe Casing.*
9. *Perforated Smoke-pipe Casing.*
10. *Outside Top-plate.*
11. *Inside Top-plate.*
12. *Fire-pot.*
13. *Ash-pit Base.*
14. *Bottom Stove-plate.*
15. *Inside-ring.*
16. *Casing.*
17. *Fire-door.*
18. *Grate.*
18. *Fire-door Frame.*
19. *Grate-ring.*
20. *Grate-bar.*
21. *Base-plate.*
22. *Top-ring, of Base-Plate.*
23. *Ash-pit Front.*
24. *Ash-pit Door.*

For list of names of the parts designated by the numbers in the engravings see page 416.

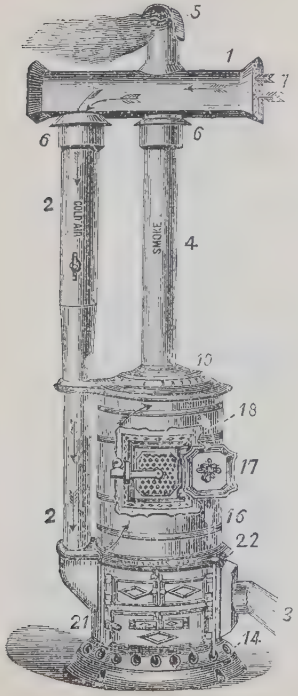


Fig. 550. SPEAR CAR-HEATER. (*Pattern A.*)

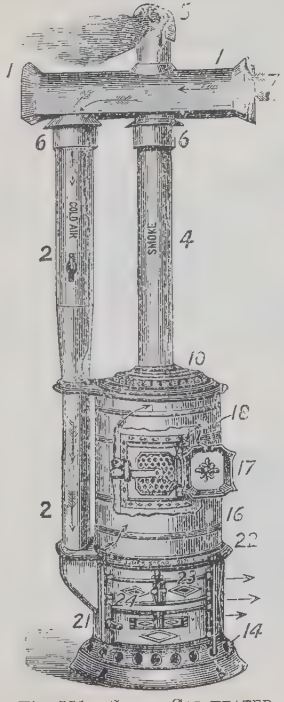


Fig. 551. SPEAR CAR-HEATER. (*Pattern B.*)

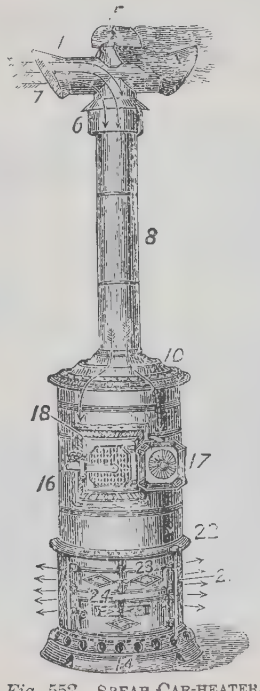


Fig. 552. SPEAR CAR-HEATER. (*Pattern C.*)

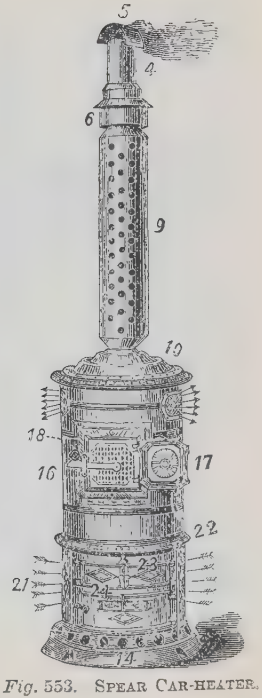


Fig. 553. SPEAR CAR-HEATER. (*Pattern D.*)

For list of names of the parts designated by the numbers in the engravings, see page 410.

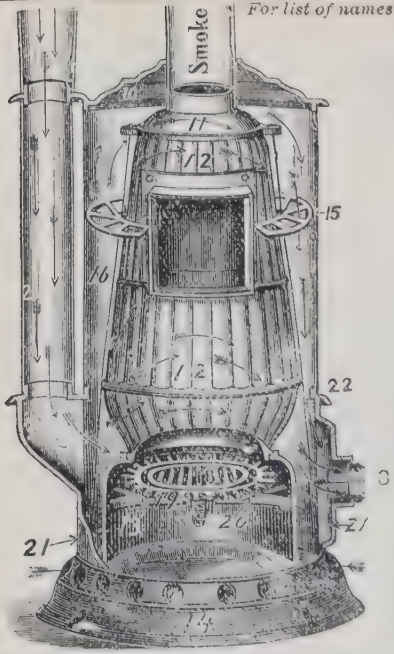


Fig. 554. SPEAR ANTI-CHECKER CAR-HEATER. *Section.*

Fig. 555.

OUTSIDE TOP-PLATE, *for Stoves A and B.*

Fig. 556.

OUTSIDE TOP-PLATE, *for Stove C.*

Fig. 557.

OUTSIDE TOP-PLATE, *for Stove D.*

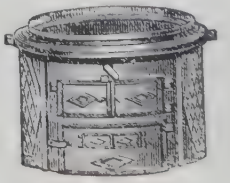


Fig. 558.

BASE-PLATE, WITH TOP-RING, *for Stoves C and D.*

Fig. 559.

VALVE, *for Top-plate, for Stove G.*

Fig. 560.

INSIDE-RING, *for Stoves A, B, C and D.*

Fig. 561.

INSIDE TOP-PLATE, *for Stoves A, B, C and D.*

Fig. 562.

TOP-RING, *for Base-plate for Stoves C and D.*

Fig. 563.

FIRE-DOOR AND DOOR-FRAME, *for Stoves A, B, C and D.*

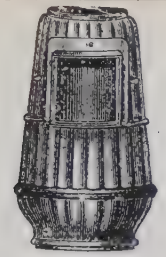


Fig. 564. FIRE-POT, *for Stoves A, B, C and D.*

Fig. 565. ASH-PIT FRONT, *for Stoves A, B, C and D.*

Fig. 563. FIRE-DOOR FRAME, *for Stoves A, B, C and D.*

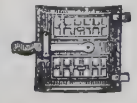


Fig. 567. FIRE-DOOR.

Fig. 568.
ASH-PIT BASE, *for Stoves A, B, C and D.*

Fig. 569.
BASE-PLATE SCREEN, *for Stoves C and D.*

Fig. 570.
GRATE, *for Stoves A, B, C and D.*

Fig. 571.
GRATE-BAR, *for Stoves A, B, C and D.*

Fig. 572. BOTTOM STOVE-PLATE, *for Stoves A, B, C and D.*

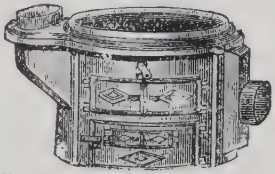


Fig. 573. BASE-PLATE, WITH TOP-RING, *for Stove A.*

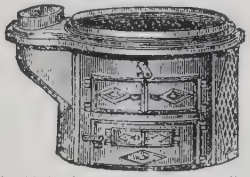


Fig. 574. BASE-PLATE, WITH TOP-RING, *for Stove B.*

Fig. 575. FIRE-PROOF BOTTOM, *for Stoves A, B, C and D.*

Fig. 576.
GRATE.

Fig. 577.
GRATE-RING.

Fig. 578.
POKE-HOLE FUNNEL.

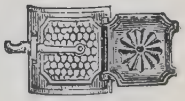


Fig. 579.
DOUBLE FIRE-DOOR.

BAKER CAR-HEATER.

List of Names of the Parts of the Baker Car-heater, which are Designated by the Numbers in Fig. 581.

1. *Bottom-plate.*
2. *Ash-pit.*
3. *Grate.*
4. *Fire-pot.*
5. *Inside-casing.*
6. *Outside-casing.*
8. *Cast-iron Top.*
9. *Safety-grate.*
11. *Heat-guard.*
12. *Smoke-top.*
13. *Feed-door.*
16. *Rocking-bar, for Grate.*
18. *Ring, for Smoke-top.*
20. *Coil.*
23. *Circulating-drum.*
25. *Combination-cock.*
26. *Safety-valve.*
28. *Filling-funnel.*
30. *Pressure-gauge.*

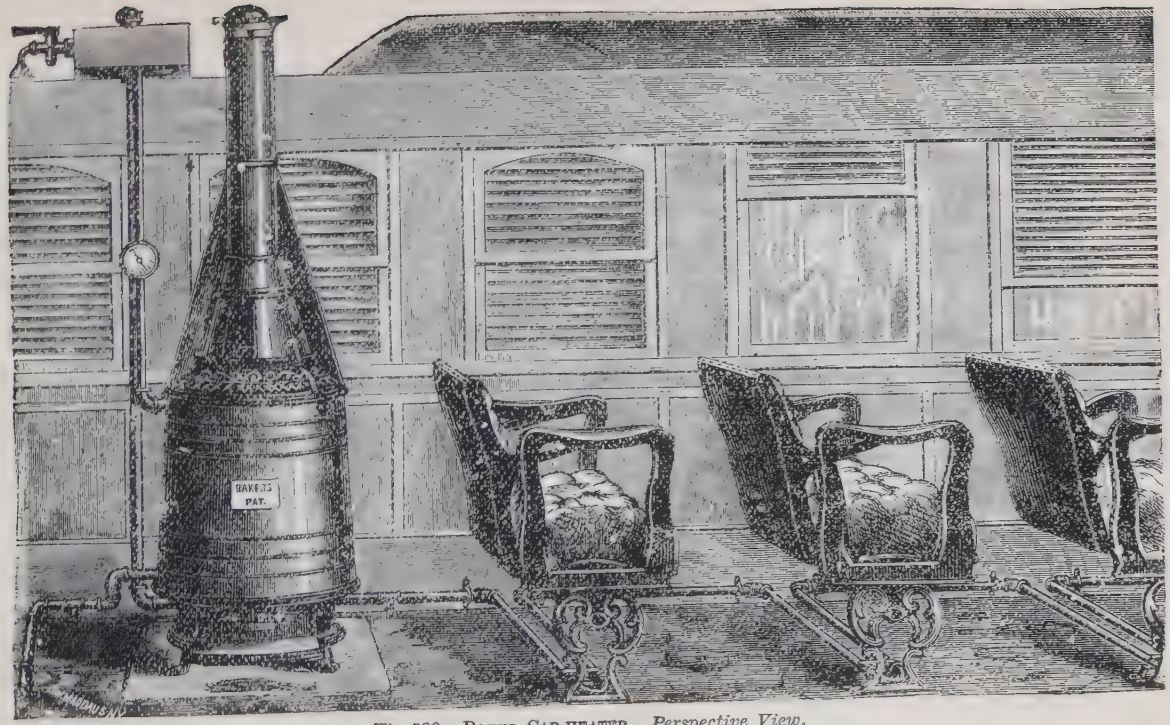


Fig. 580. BAKER CAR-HEATER. *Perspective View.*

For list of names of the parts designated by the numbers in the engraving, see page 414.

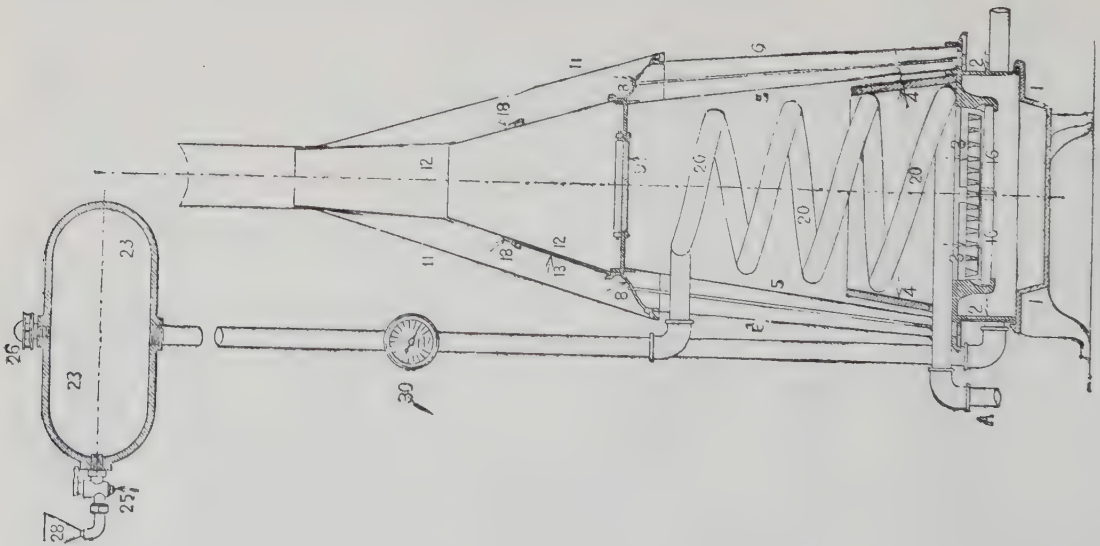


Fig. 381
SECTION OF BAKER CAR-HEATER.

Fig. 582.
BOTTOM STOVE-PLATE.

Fig. 583.
ASH-PIT.

Fig. 584.
GRATE.

Fig. 585.
FIRE-POT.

Fig. 586.
INSIDE-CASING.

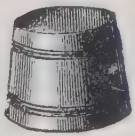


Fig. 587.
OUTSIDE-CASING.

Fig. 588.
ASH-PIT DOOR.

Fig. 589.
CAST-IRON TOP.

Fig. 590.
SAFETY-GRATE.

Fig. 591.
SAFETY-GRATE SPRING.

Fig. 592.
HEAT GUARD.

Fig. 593.
SMOKE-TOP.

Fig. 594.
FEED-DOOR.

Fig. 595.
FEED-DOOR HANDLE.

Fig. 596.
SAFETY-GRATE LATCH.

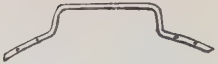


Fig. 598.
ASH-PIT-DOOR HANDLE.

Fig. 599.
RING FOR SMOKE-TOP.

Fig. 597.
ROCKING-BAR FOR GRATE.

Fig. 600.
GRATE-SHAKER.

Fig. 601. COIL

Fig. 605.
SAFETY-VALVE.

Fig. 607. FILLING-FUNNEL.

Fig. 609.
PRESSURE-GAUGE.

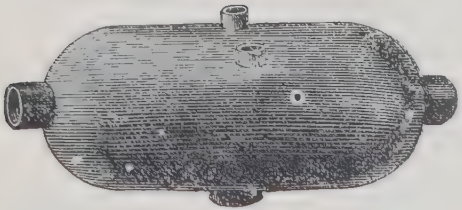


Fig 602.
CIRCULATING-DRUM.

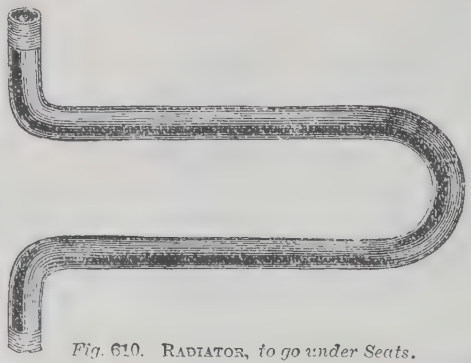


Fig. 610. RADIATOR, *to go under Seats.*

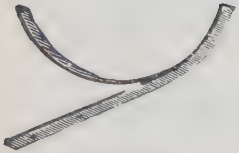


Fig. 603.
DRUM-SUPPORT.

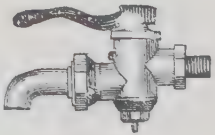


Fig. 604.
COMBINATION-COCK.

Fig. 606.
SAFETY-VALVE BALL.

Fig. 608.
DRUM-COVER.

Fig. 611. RADIATOR-STAND.

Fig. 612.
PIPE-SUPPORT.

Fig. 613.
RADIATOR-STAND.

Fig. 614.
RADIATOR-STAND.

Fig. 615.
DOUBLE PIPE-STRAP AND BACK.

Fig. 616.
SINGLE PIPE-STRAP

Fig. 617.
CLOSE RETURN-BEND.

Fig. 618.
OPEN RETURN-BEND.

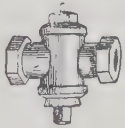


Fig. 619.
DRAW-OFF COCK.

Fig. 620.
ELBOW.

Fig. 621.
REDUCING-TEE.

Fig. 622.
NIPPLE.

Fig. 623.
PIPE-COUPLING.

Fig. 624.
BUSHING FOR PIPES.

Fig. 625.
PLUG.

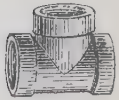


Fig. 626.
TEE OR T.

Fig. 627.
REDUCING PIPE-COUPLING.

Fig. 628.
UNION-JOINT.

For list of names of the parts designated by the numbers in the engraving, see page 421.

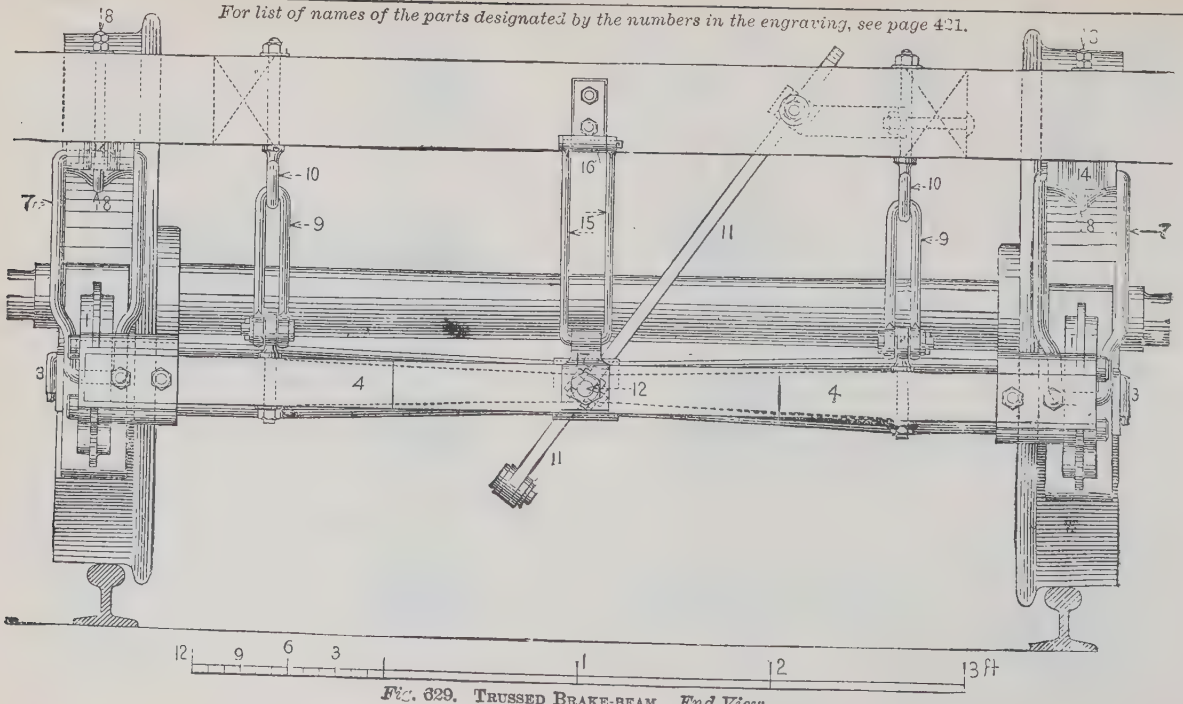


Fig. 329. TRUSSED BRAKE-BEAM. *End View.*

BRAKES.

LIST OF NAMES OF THE PARTS OF BRAKES WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 629–631.

1. *Brake-block.*
2. *Brake-shoe.*
3. *Brake-shoe Key.*
4. *Trussed Brake-beam.*
5. *Brake-beam Truss-rod.*
6. *Brake-beam King-post.*
7. *Brake-hanger.*
8. *Brake-hanger Carrier.*
9. *Brake Safety-chain or Link.*
10. *Brake Safety-chain Eye-bolt.*
11. *Brake-lever.*
12. *Brake-lever Fulcrum.*
13. *Brake-lever Stop.*
14. *Brake-hanger Bearing.*
15. *Parallel Brake-hanger.*
16. *Parallel Brake-hanger Carrier.*
17. *Parallel Brake-hanger Eye.*

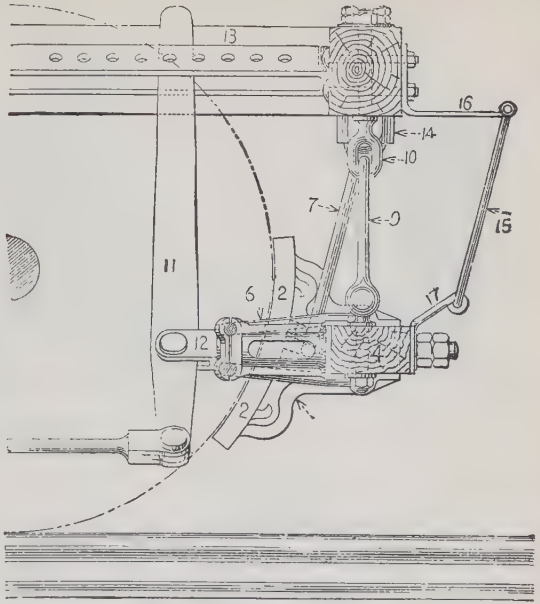


Fig. 630.
TRUSSED BRAKE-BEAM.
Side View.

For list of names of the parts designated by the numbers in the engraving, see page 421.

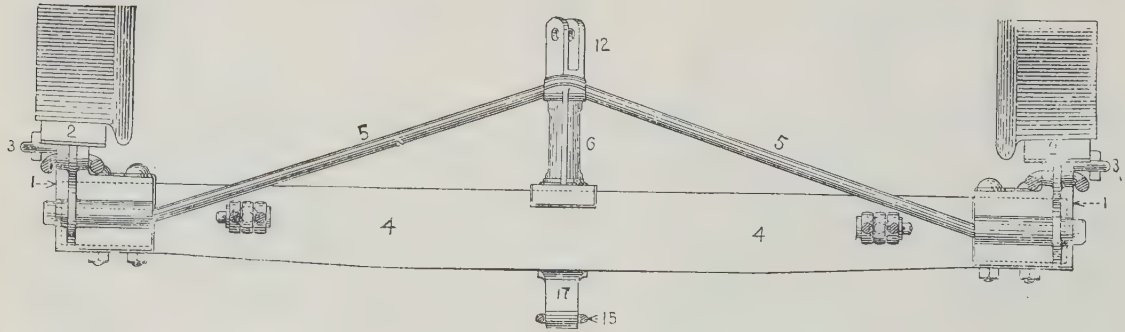


Fig. 631.
TRUSSED BRAKE-BEAM.
Plan.

For list of names of the parts designated by the numbers in fig. 633, see page 421.

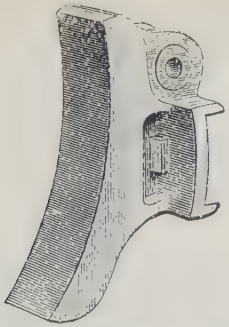


Fig. 632. BRAKE-HEAD.

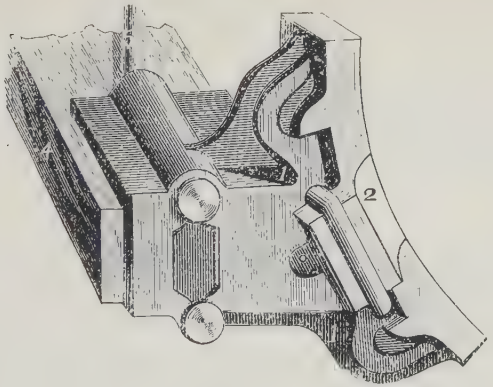


Fig. 633. BRAKE-BLOCK SHOE AND KEY.

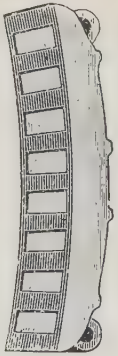


Fig. 634. CONGDON BRAKE-SHOE.

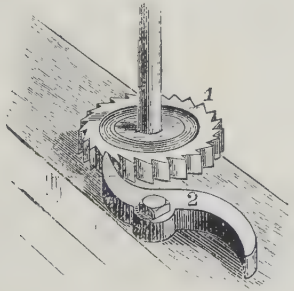


Fig. 636. (1) BRAKE RATCHET-WHEEL. (2) BRAKE-PAWL

Fig. 635. BRAKE-WHEEL

BRAKES.

LIST OF NAMES OF THE PARTS OF BRAKES WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 637–645.

1. *Brake-beam.*
2. *Brake-lever.*
3. *Brake-shaft Chain.*
4. *Brake-shaft Connecting-rod.*
5. *Lower Brake-rod.*
6. *Secondary Brake-rod.*
7. *Floating-lever.*
8. *Floating Connection-rod.*
9. *Centre Brake-lever.*
10. *Centre Brake-lever Chain.*
11. *Centre Brake-lever Sheaves.*
12. *Long Brake-rod.*

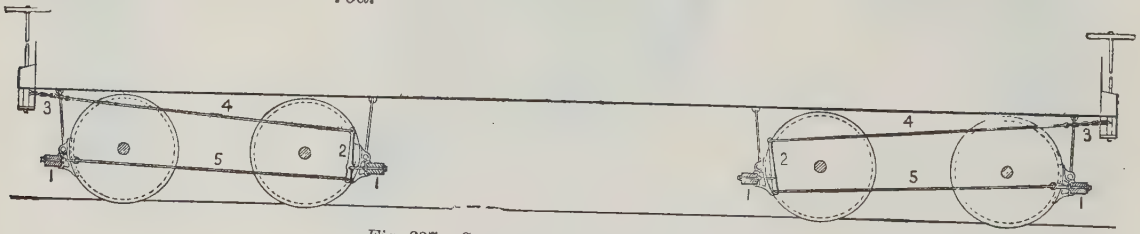


Fig. 637. SINGLE-LEVER BRAKE. *Side View.*

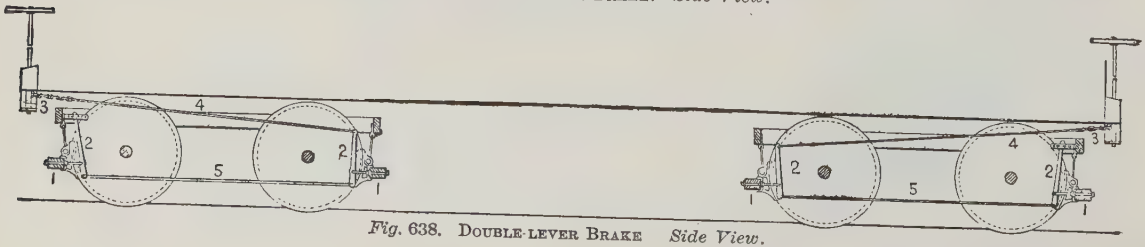


Fig. 638. DOUBLE-LEVER BRAKE *Side View.*

For list of names of the parts designated by the numbers in the engravings, see page 424.

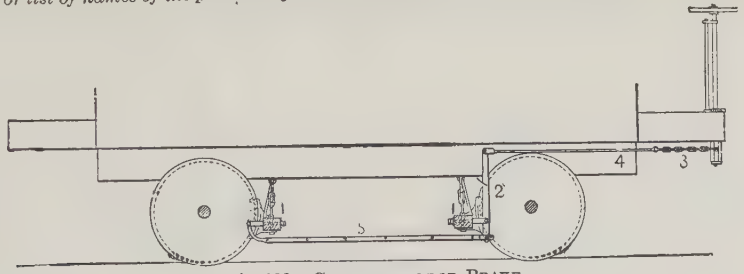


Fig. 639. COMPRESSION-ROD BRAKE.
Side View.

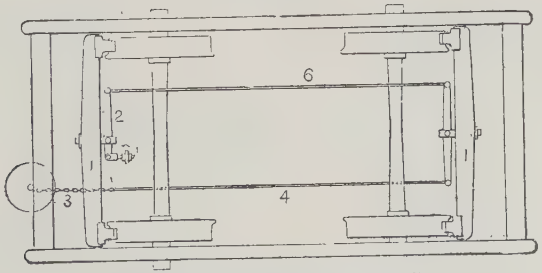


Fig. 640. BRAKE FOR DROP-BOTTOM CAR.
Plan.

For list of names of the parts designated by the numbers in the engravings, see page 424.

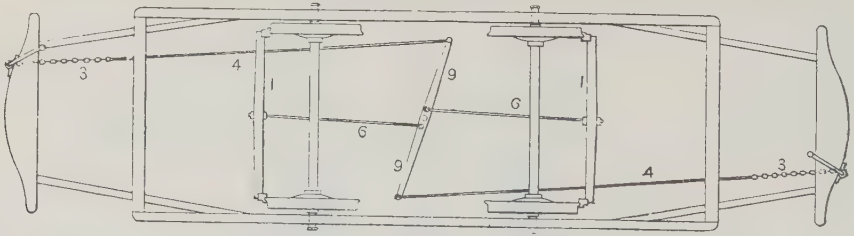


Fig. 641. TYLER-BRAKE FOR STREET-CARS.
Plan.

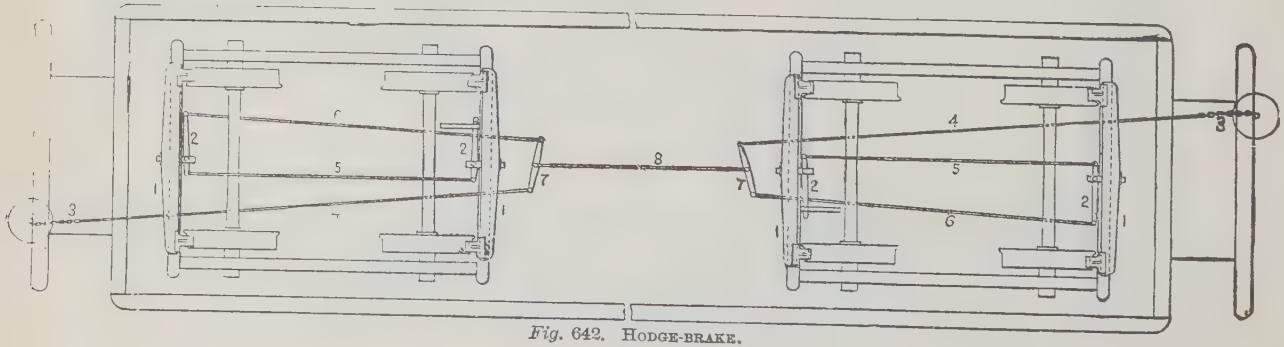


Fig. 642. HODGE-BRAKE.
Plan.

For list of names of the parts designated by the numbers in the engravings, see page 424.

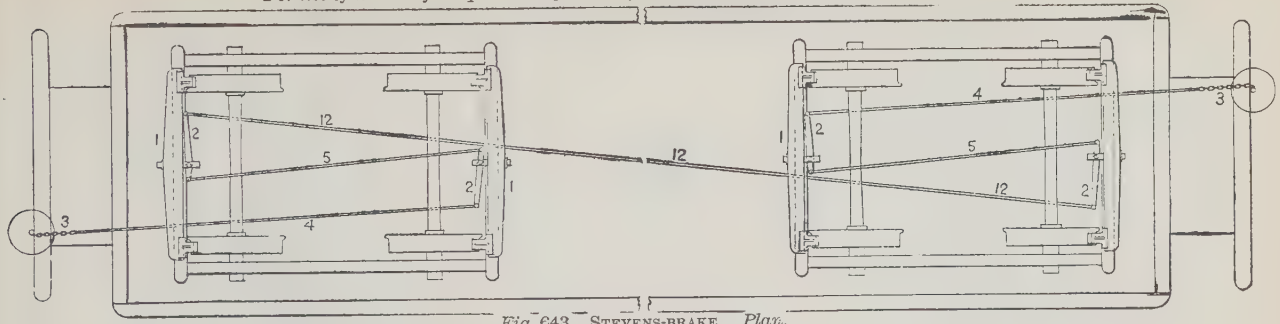


Fig. 643. STEVENS-BRAKE. *Plan.*

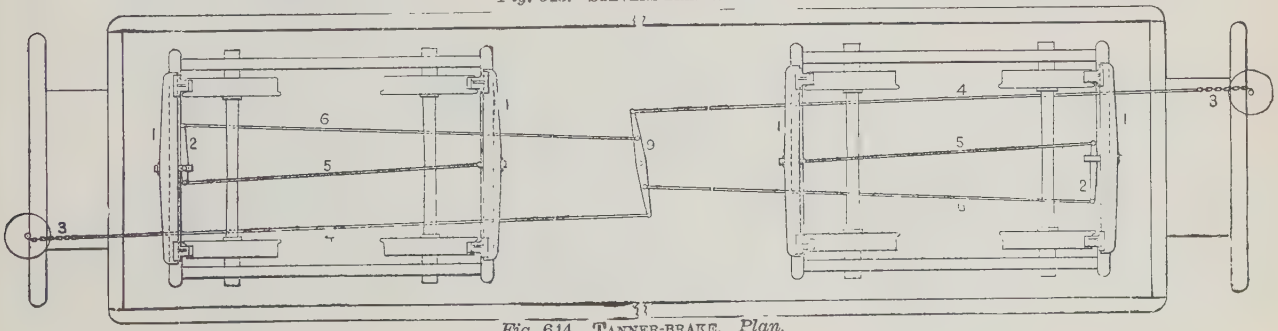


Fig. 644. TANNER-BRAKE. *Plan.*

For list of names of the parts designated by the numbers in the engraving, see page 424.

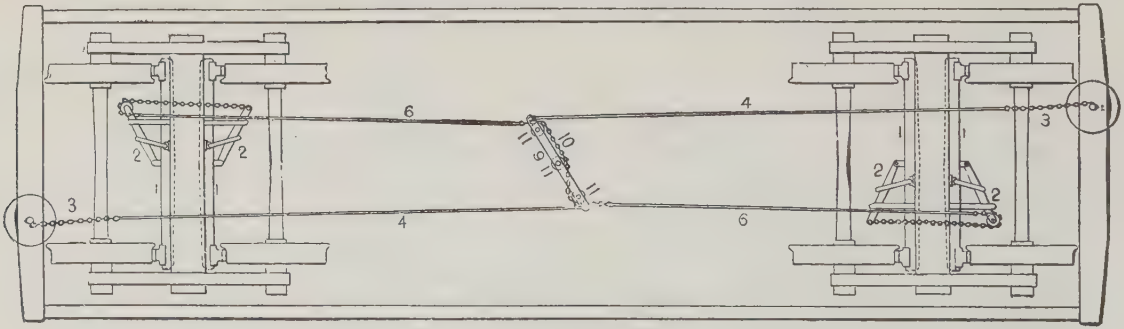


Fig. 645. ELDER-BRAKE.
Plan.

CREAMER-BRAKE.

LIST OF NAMES OF THE PARTS OF THE CREAMER-BRAKE WHICH ARE DESIGNATED BY THE NUMBERS IN FIGS. 646–648.

1. *Drum.*
2. *Cross-bar.*
3. *Post-bracket.*
4. *Top-arm.*
5. *Jointed Top-pawl.*
6. *Jointed Side-pawl.*
7. *Tripping-lever.*
8. *Connecting-rod.*
9. *Roof-lever.*
10. *Side-pawl.*
11. *Collar.*
12. *Drum-cover.*
13. *Stud, for Jointed Side-pawl.*
14. *Standard, for Cross-bar.*
15. *Bottom-ratchet of Drum.*
16. *Pipe-stay.*
17. *Brake-wheel.*
18. *Upper Brake-shaft Bearing.*
19. *Guard-pipe.*
20. *Chain-pulley.*

For list of names of the parts designated by the numbers in the engravings, see page 428.

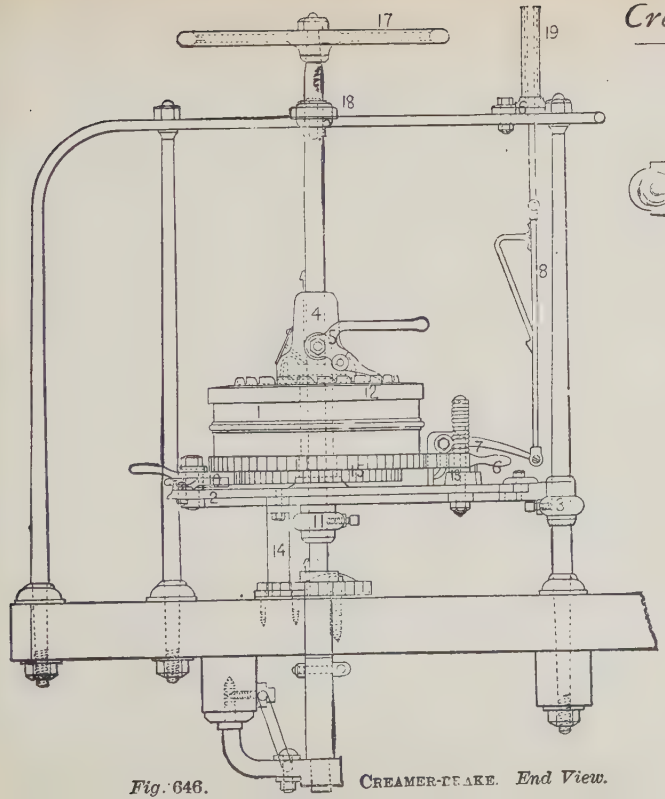


Fig. 646. CREAMER-BRAKE. *End View.*

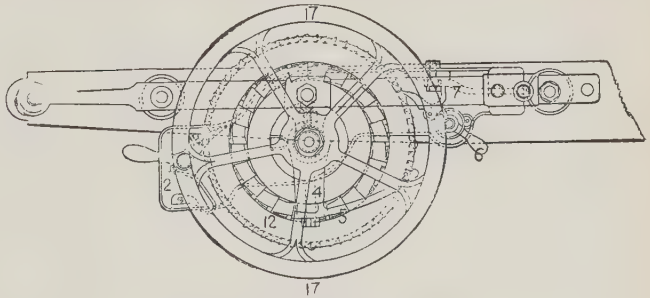


Fig. 647. CREAMER-BRAKE. *Plan.*

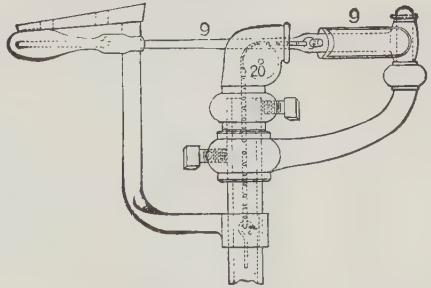


Fig. 648. *Side View.*
ROOF-LEVER, FOR CREAMER-BRAKE.

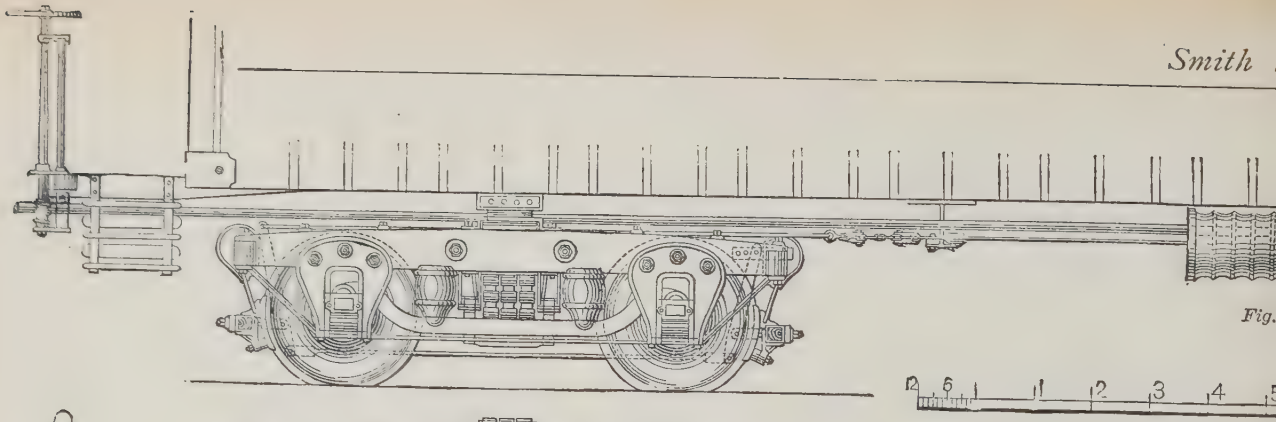
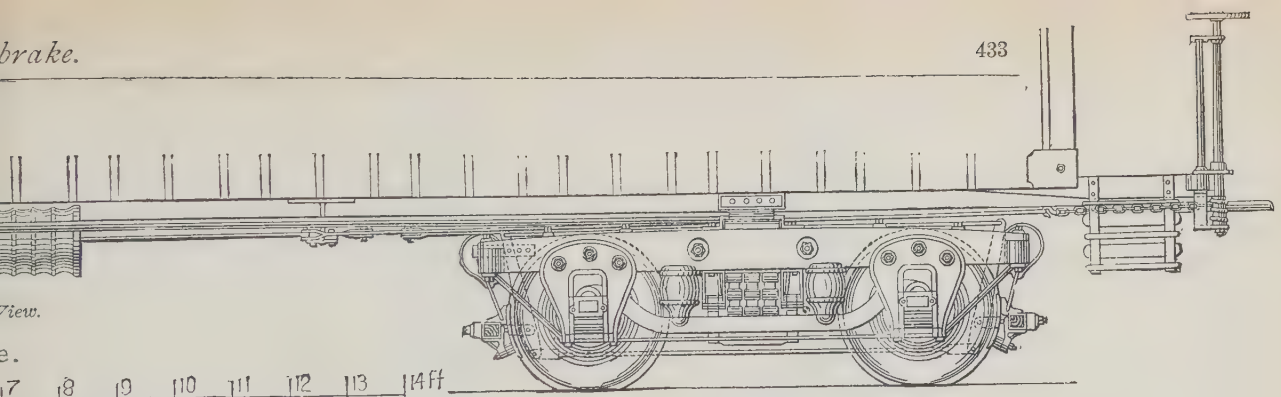


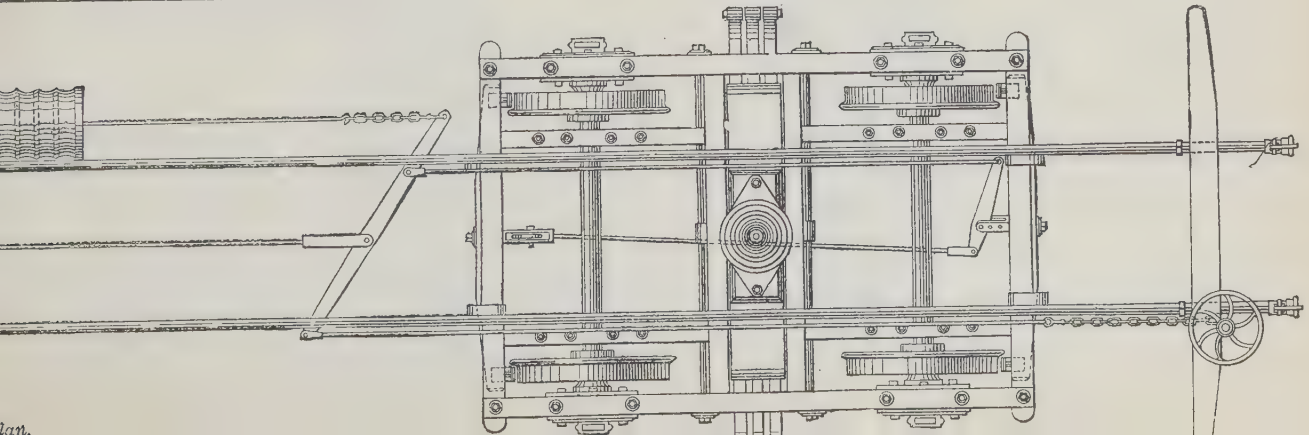
Fig.



View.

e.

7 8 9 10 11 12 13 14 ft



Plan.

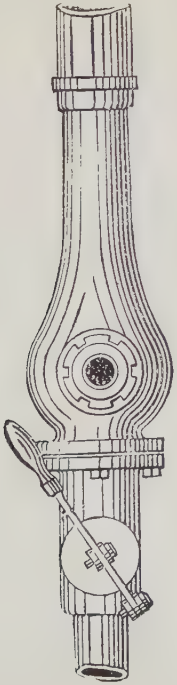


Fig. 651. *Outside View.*

EJECTOR.

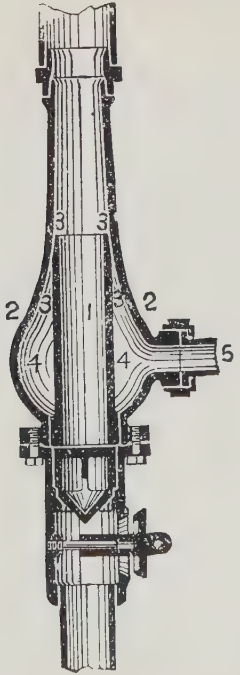


Fig. 652. *Section.*

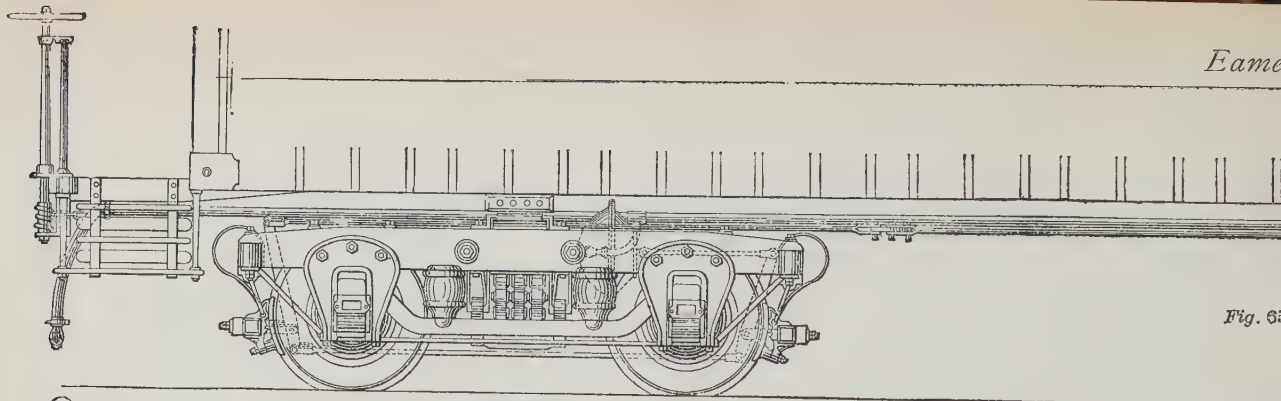
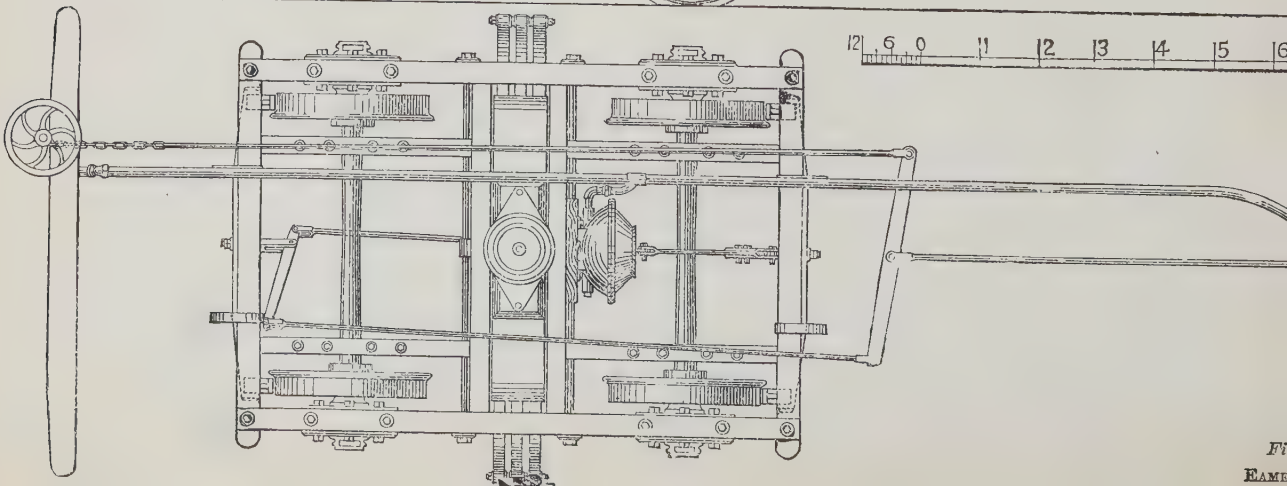
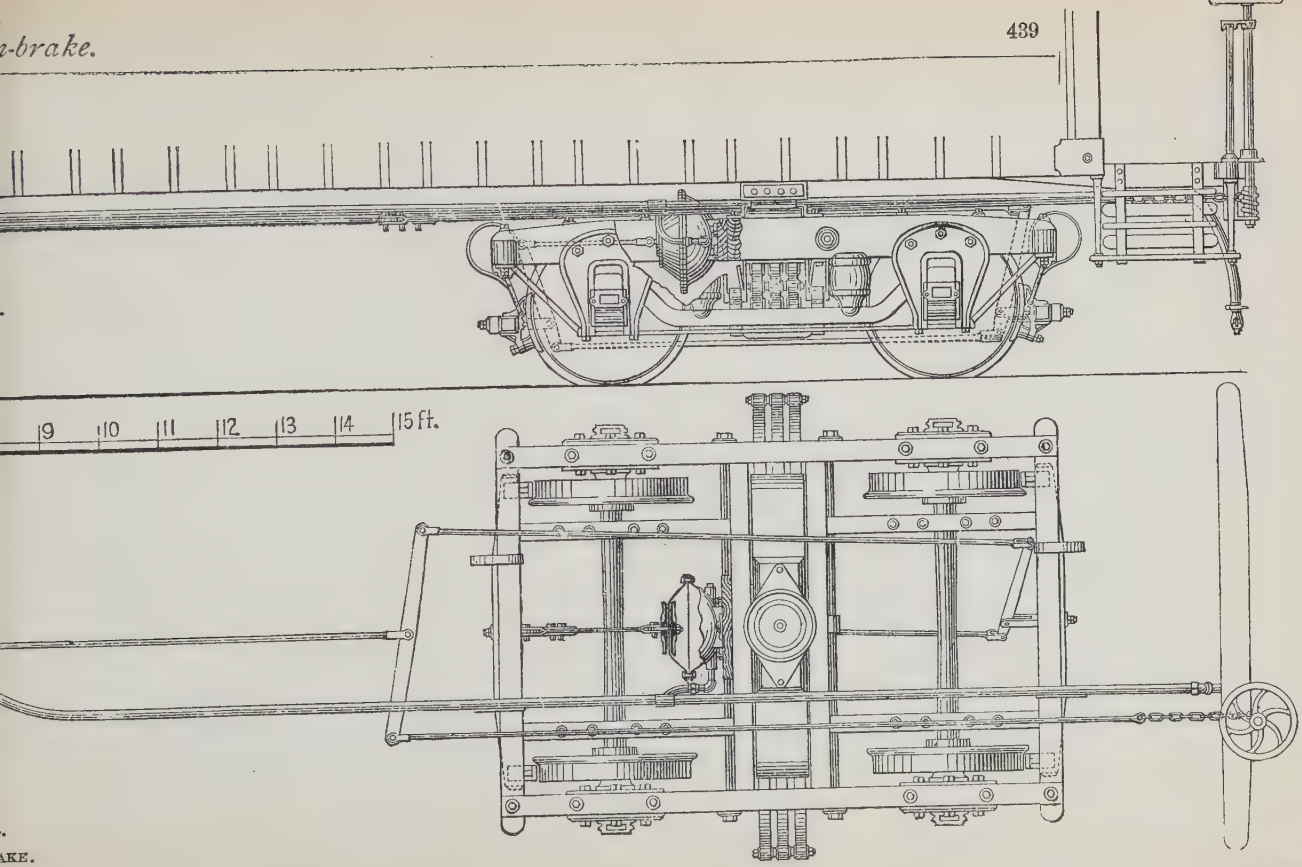


Fig. 63



Fi
EAME



AKE.

WESTINGHOUSE-BRAKE.

LIST OF NAMES OF THE PARTS OF THE WESTINGHOUSE-BRAKE ATTACHED TO THE LOCOMOTIVE AND TENDER AND DESIGNATED BY THE NUMBERS IN FIGS. 655–657.

1. *Main Air-reservoir.*
2. *Brake-cylinder, for Tender-brake.*
3, 4. *Engine and Air-pump.*
3. *Steam-cylinder.*
4. *Air-cylinder.*
5. *Air-strainer.*
6. *Steam-pipe.*
7. *Exhaust-pipe.*
8. *Supply-pipe.*
9. *Discharge-pipe.*
10. *Three-way Cock.*
11. *Tender Brake-hose.*
12. *Driving-wheel Brake-cylinder.*
13. *Throttle-valve.*
14. *Brake-pipe.*
15. *Stop-cock.*
16. *Triple-valve.*
17. *Triple-valve Branch-pipe.*
18. *Auxiliary-reservoir.*
19. *Brake-cylinder Pipe.*
20. *Air-gauge.*
21. *Brake-block Tie-rod*

For list of names of the parts designated by

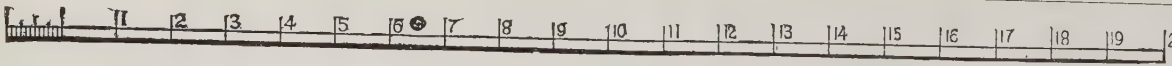
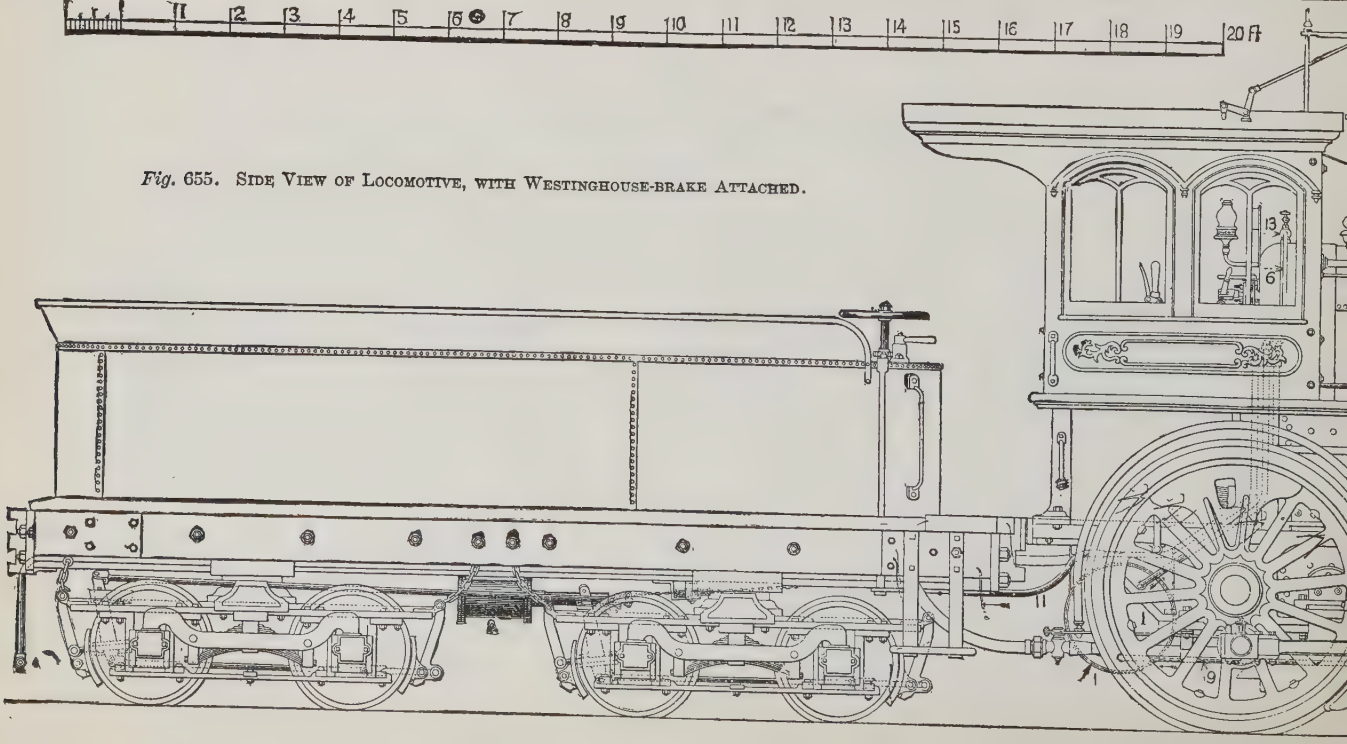
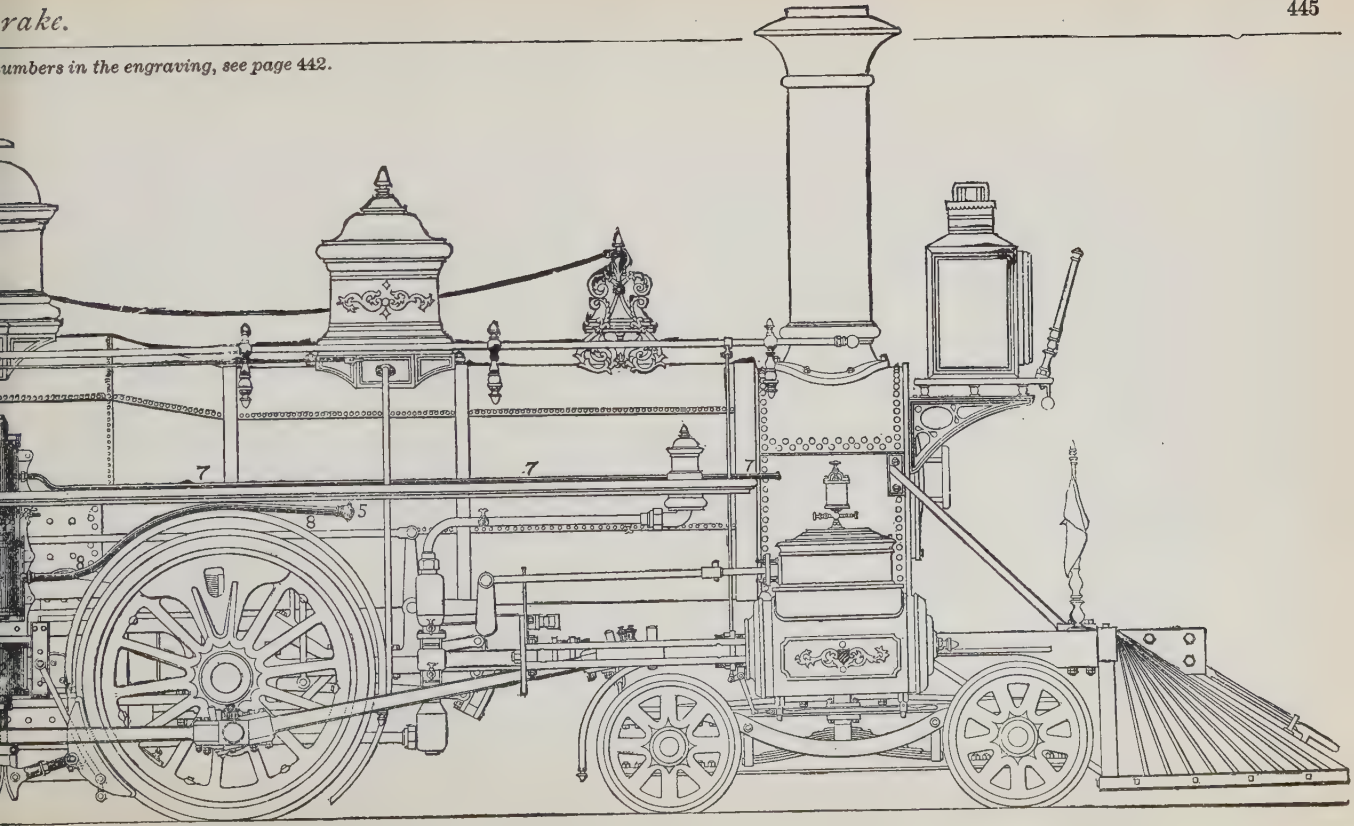


Fig. 655. Side View of Locomotive, with Westinghouse-brake Attached.



umbers in the engraving, see page 442.



For list of names of the parts designated

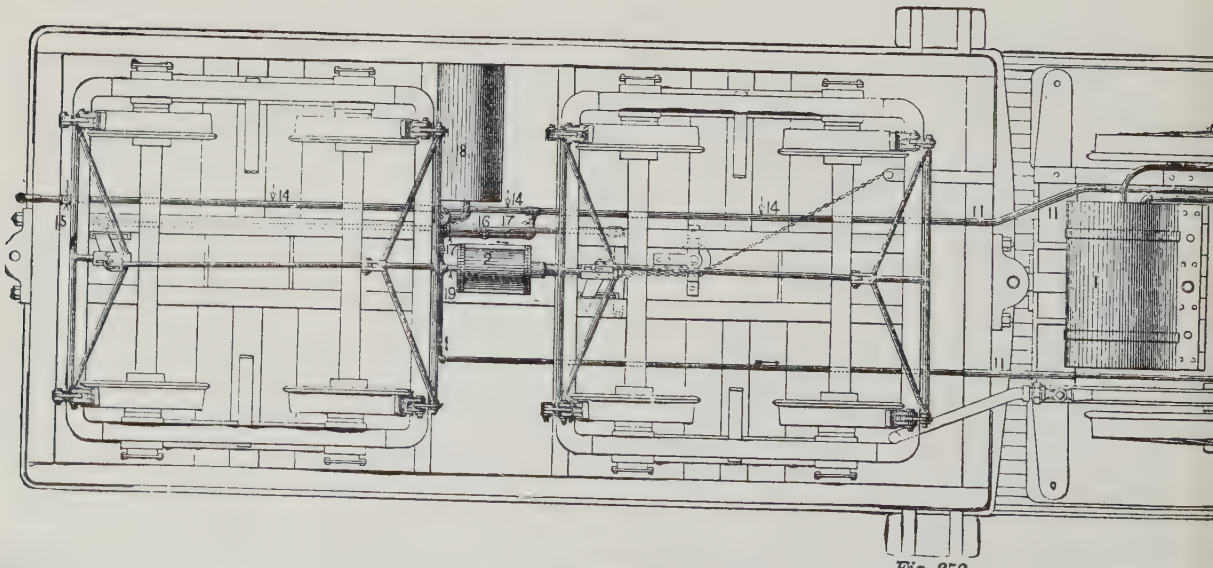
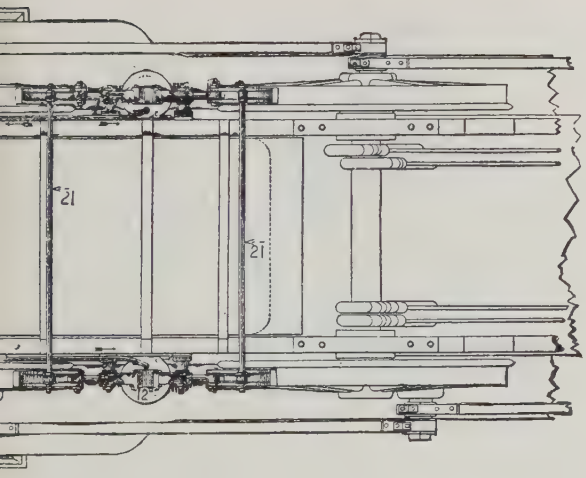


Fig. 656.

INVERTED PLAN OF ENGINE AND TENDER, WITH WESTINGHOUSE AUTOMATIC-

ers in the engravings, see page 442.



TACHED.

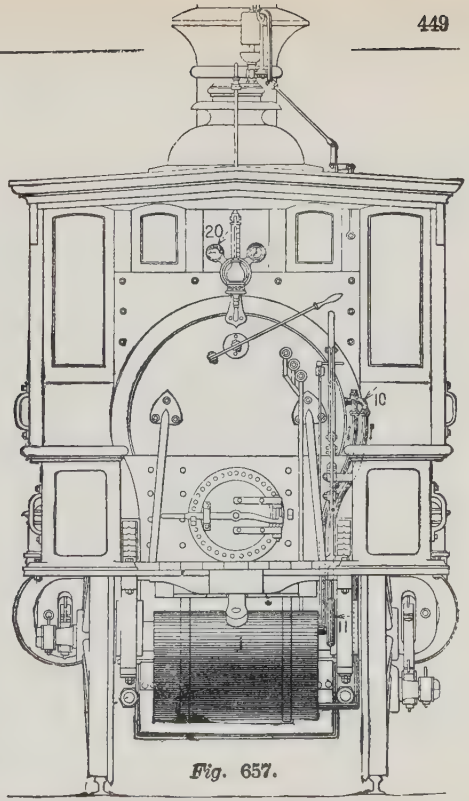


Fig. 657.

END VIEW OF LOCOMOTIVE, WITH WESTINGHOUSE AUTOMATIC-BRAKE ATTACHED.

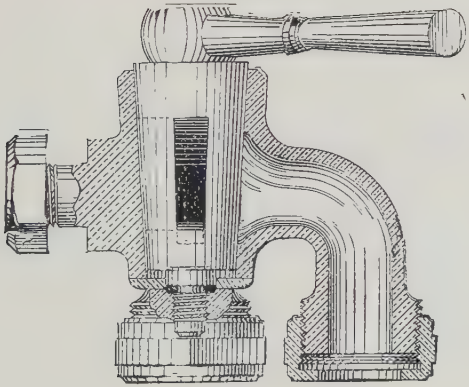


Fig. 658.
Section.

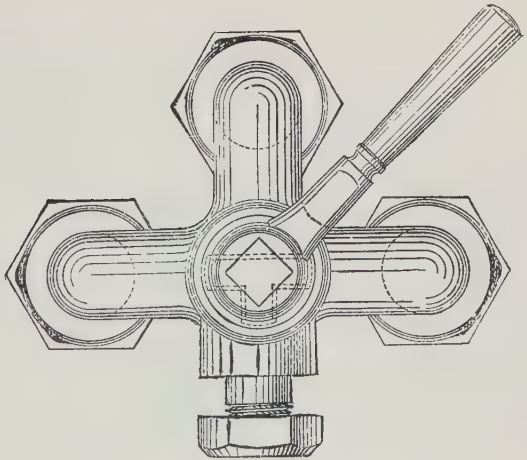


Fig 659.
Plan.

THREE-WAY COCK, *for Westinghouse-brake.*

WESTINGHOUSE CAR-BRAKE.

LIST OF NAMES OF THE PARTS OF THE WESTINGHOUSE-BRAKE ATTACHED TO THE CARS AND DESIGNATED BY THE NUMBERS IN FIGS. 660-663.

1. *Auxiliary-reservoir, for Car-brake.*
2. *Brake-cylinder, for Car-brake.*
3. *Cross-head.*
4. *Cylinder-lever Bracket.*
5. *Release-lever.*
6. *Release-lever Rod.*
7. *Release-spring Rod.*
8. *Release-spring.*
9. *Triple-valve.*
10. *Drain-cup.*
11. *Cylinder-levers.*
12. *Floating Connecting-rod.*
13. *Brake-shaft Connecting-rod.*
14. *Lower Brake-rod.*
15. *Brake-lever.*
16. *Floating-lever.*
17. *Secondary Brake-rod.*
18. *Cylinder-lever Tie-rod.*
19. *Cylinder-lever Support.*
20. *Brake-pipe.*
21. *Auxiliary-reservoir Bands.*
22. *Auxiliary-reservoir Beams.*
23. *Auxiliary-reservoir Nipple.*
24. *Triple-valve Branch-pipe.*
25. *Brake-cylinder Pipe.*
26. *Leakage-valve.*
27. *Conductor's-valve Pipe.*
28. *Conductor's-valve Discharge-pipe.*
29. *Stop-cock, for Brake-pipe.*
30. *Brake-hose.*

For list of names of the parts designate

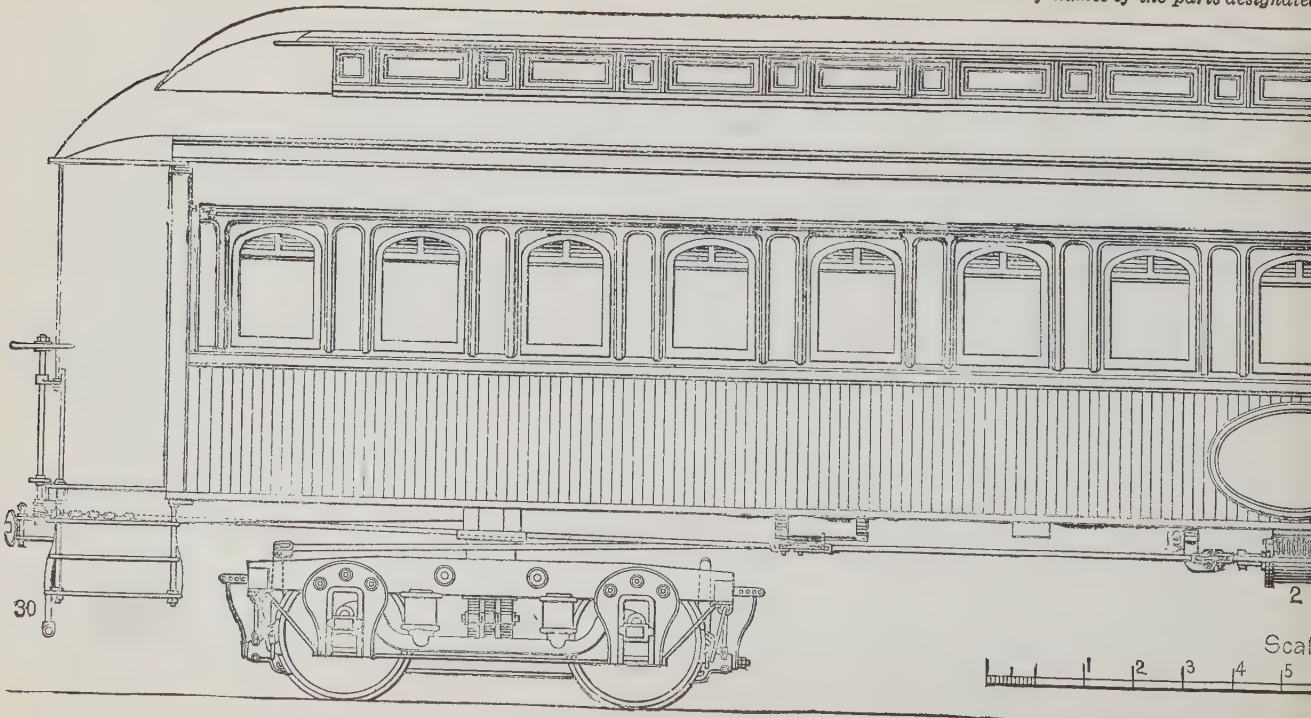
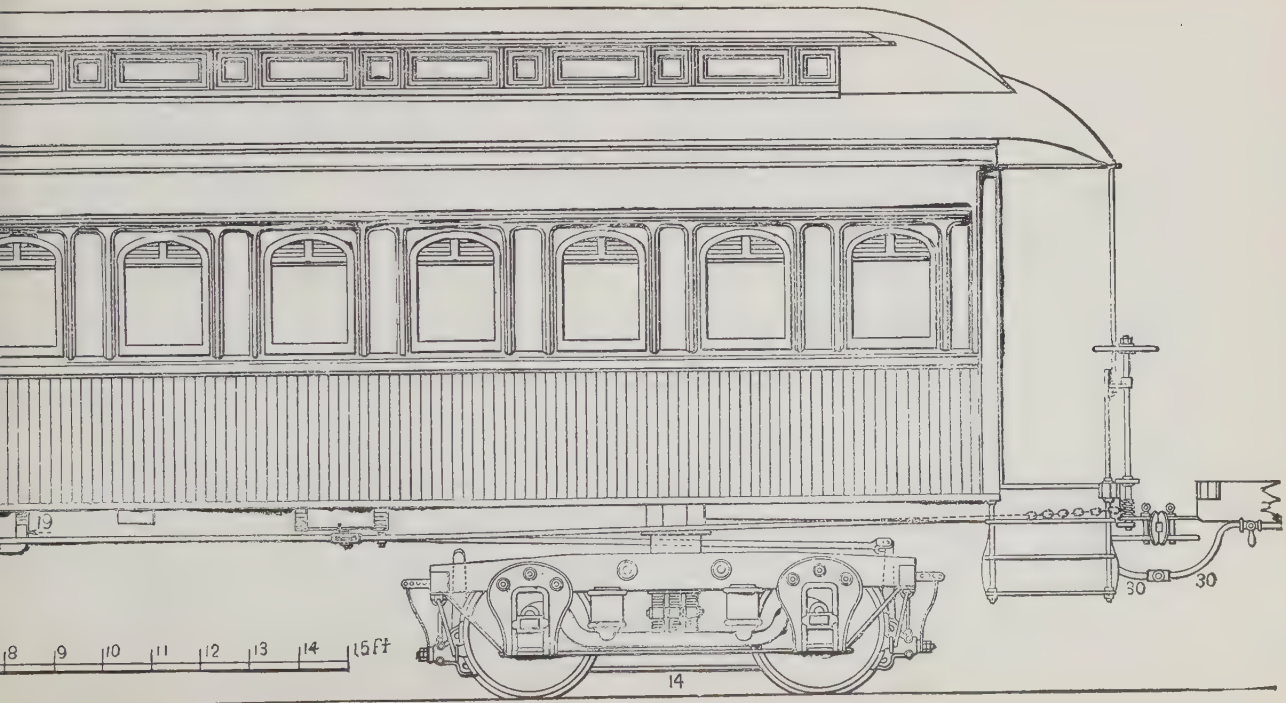


Fig. 660. SIDE VIEW OF CAR, WI

ers in the engraving see page 452.



HOUSE AUTOMATIC-BRAKE ATTACHED.

For list of names of the parts designated

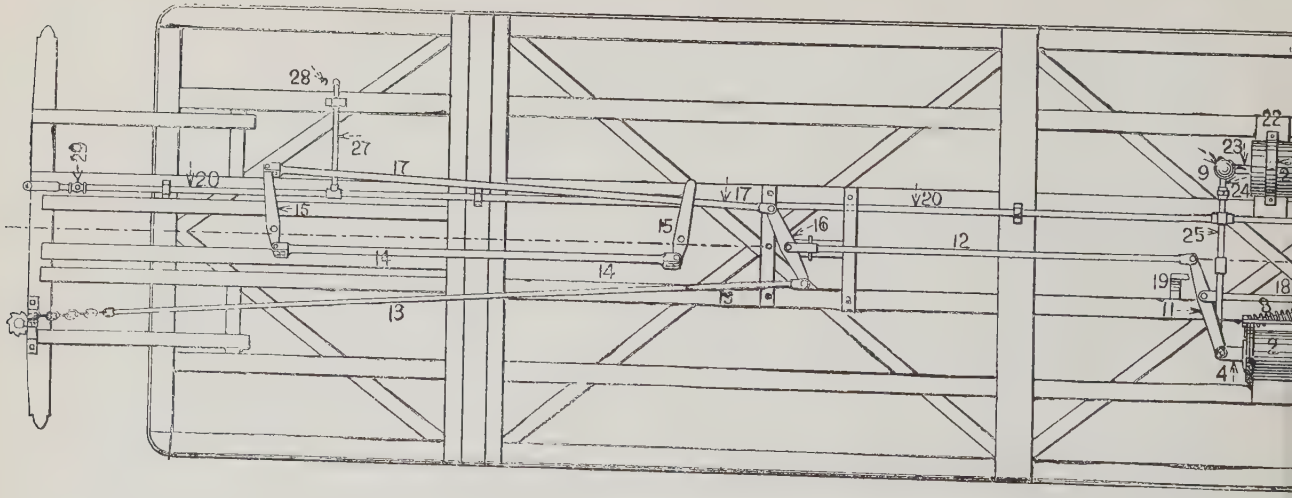
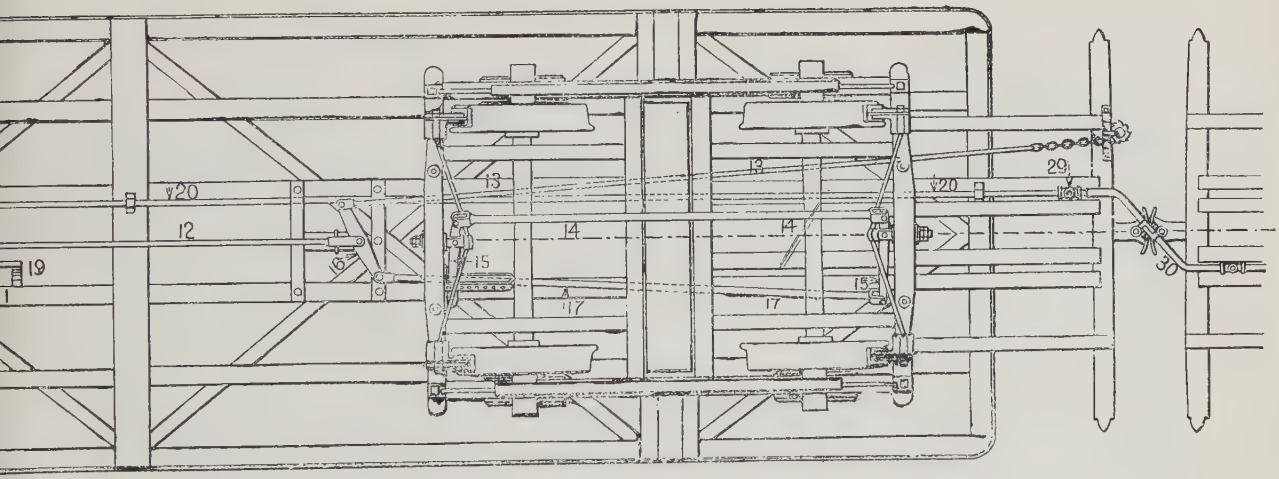


Fig. 6

INVERTED PLAN OF CAR, WITH WESTINGH

s in the engraving, see page 452.



ATIC-BRAKE ATTACHED.

For list of names of the parts designated by the numbers in the engraving, see page 452.

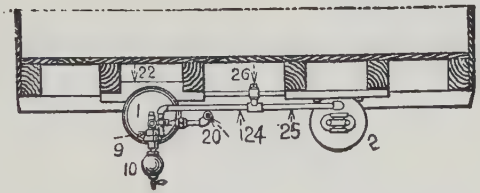


Fig. 663.

TRANSVERSE SECTION OF CAR, WITH WESTINGHOUSE AUTOMATIC BRAKE ATTACHED.

ENGINE AND AIR-PUMP, FOR WESTINGHOUSE-BRAKE.

LIST OF NAMES OF PARTS OF THE ENGINE AND AIR-PUMP OF WESTINGHOUSE-BRAKE DESIGNATED BY THE NUMBERS IN FIGS. 664–665.

2. *Steam Cylinder-head.*
3. *Steam-cylinder.*
4. *Centre-piece.*
5. *Air-cylinder.*
6. *Air-cylinder Head.*
7. *Steam-piston.*
7′. *Steam-piston Head.*
8. *Air-piston.*
9. *Packing-rings, for Steam-piston.*
9′. *Packing-rings, for Air-piston.*
10. *Reversing-valve Plate.*
12. *Reversing-valve Stem.*
13. *Reversing-valve.*
14. *Piston-head, for Upper Steam-valve.*
14′. *Piston-head, for Lower Steam-valve.*
15. *Piston Packing-ring, for Upper Steam-valve.*
16. *Piston Packing-ring, for Lower Steam-valve.*
17. *Upper Steam-valve Bushing.*
18. *Lower Steam-valve Bushing.*
19. *Reversing-cylinder.*
20. *Reversing-piston.*
21. *Piston Packing-ring, for Reversing-piston.*
22. *Reversing-cylinder Cap.*
23. *Reversing-valve Bushing.*
24. *Reversing-valve cap.*
25. *Piston-rod Nut.*
26. *Discharge-valve Stop-bolt.*
27. *Piston-rod Packing-nut.*
28. *Piston-rod Packing-gland.*
29. *Right Chamber-cap.*
30. *Left Chamber-cap.*
31. *Discharge-valve Seat.*
32. *Upper Discharge-valve.*
33. *Lower Discharge-valve.*
34. *Receiving-valve.*
35. *Union-joint, ½-inch.*
36. *Union-joint, ¾-inch.*
37. *Union-joint, 1¼-inch.*
44. *Drain-cock, of Engine.*
45. *Steam-pipe.*
46. *Exhaust-pipe.*
47. *Supply-pipe.*
48. *Discharge-pipe.*

For list of names of the parts designated by the numbers in the engraving, see page 462.

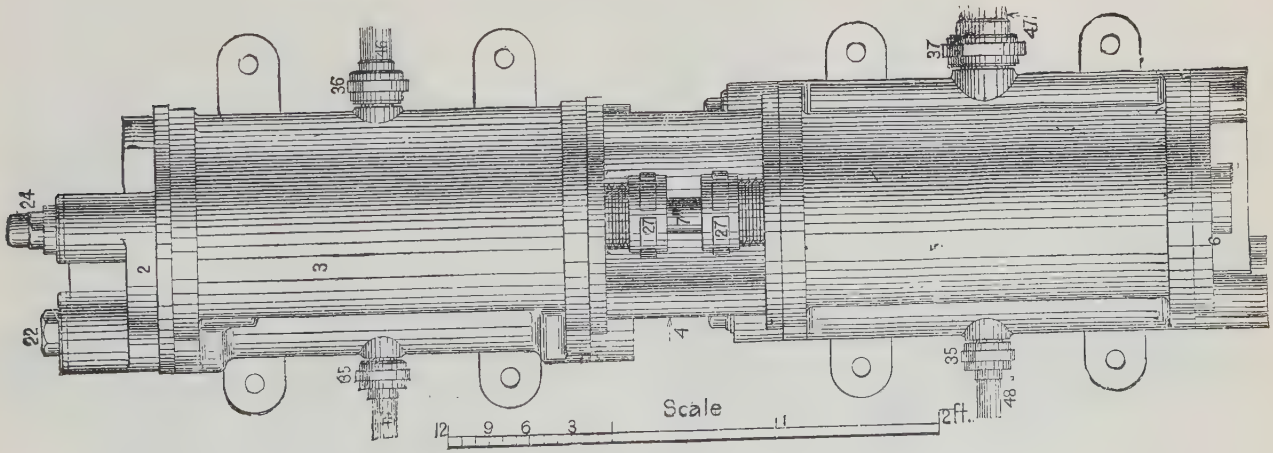


Fig. 664.

ENGINE AND AIR-PUMP COMPLETE, FOR WESTINGHOUSE-BRAKE.

Side View.

For list of names of the parts designated by the numbers in the engraving, see page 462.

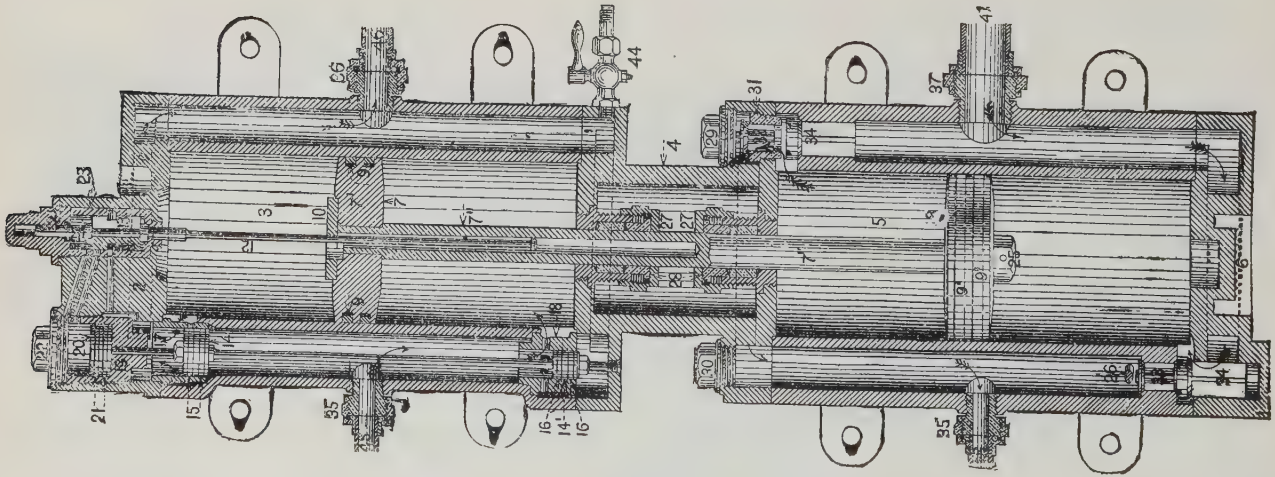


Fig. 665.

ENGINE AND AIR-PUMP COMPLETE, FOR WESTINGHOUSE-BRAKE.

Section.

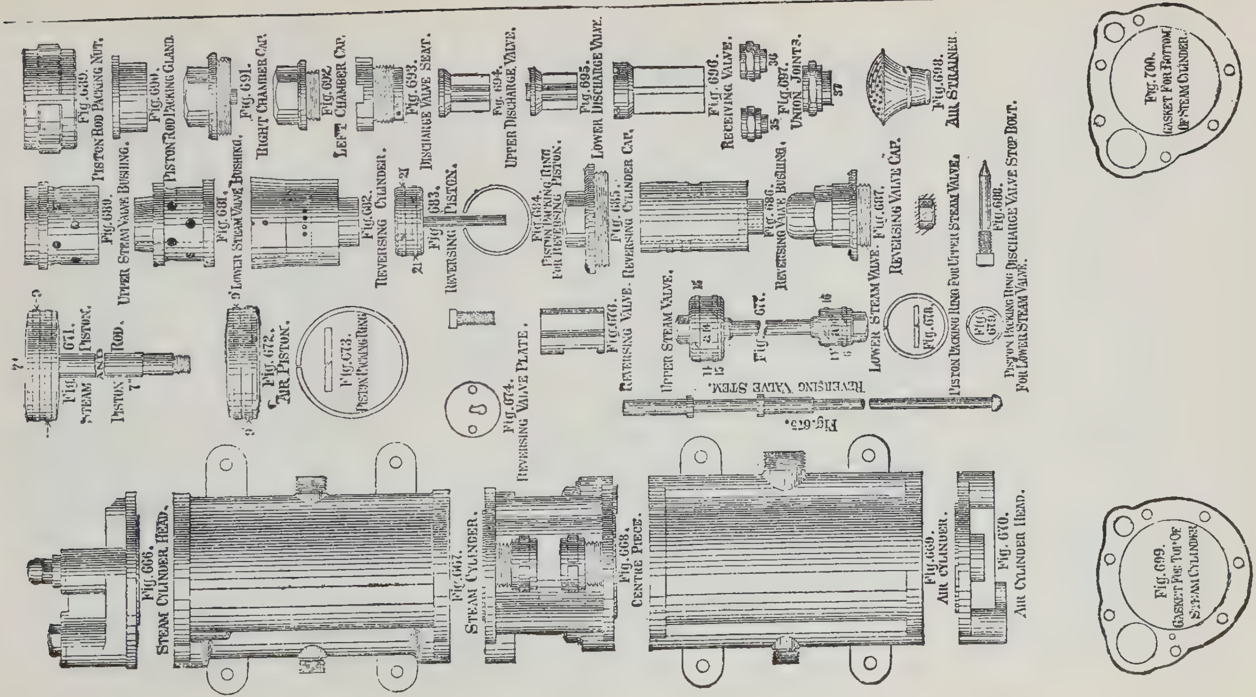


Fig. 666. Steam Cylinder Head.
Fig. 667. Steam Cylinder.
Fig. 668. Centre Piece.
Fig. 669. Air Cylinder.
Fig. 670. Air Cylinder Head.
Fig. 671. Steam Piston and Piston Rod.
Fig. 672. Air Piston.
Fig. 673. Piston Packing Ring.
Fig. 674. Reversing Valve Plate.
Fig. 675. Reversing Valve Stem.
Fig. 676. Reversing Valve.
Fig. 677. Upper Steam Valve. Lower Steam Valve.
Fig. 678. Piston Packing Ring for Upper Steam Valve.
Fig. 679. Piston Packing Ring for Lower Steam Valve.
Fig. 680. Upper Steam Valve Bushing.
Fig. 681. Lower Steam Valve Bushing.
Fig. 682. Reversing Cylinder.
Fig. 683. Reversing Piston.
Fig. 684. Piston Packing Ring for Reversing Piston.
Fig. 685. Reversing Cylinder Cap.
Fig. 686. Reversing Valve Bushing.
Fig. 687. Reversing Valve Cap.
Fig. 688. Discharge Valve Stop Bolt.
Fig. 689. Piston Rod Packing Nut.
Fig. 690. Piston Rod Packing Gland.
Fig. 691. Right Chamber Cap.
Fig. 692. Left Chamber Cap.
Fig. 693. Discharge Valve Seat.
Fig. 694. Upper Discharge Valve.
Fig. 695. Lower Discharge Valve.
Fig. 696. Receiving Valve.
Fig. 697. Union Joints.
Fig. 698. Air Strainer.
Fig. 699. Gasket for Top of Steam Cylinder.
Fig. 700. Gasket for Bottom of Steam Cylinder.

For list of names of the parts designated by the numbers in the engravings, see page 467.

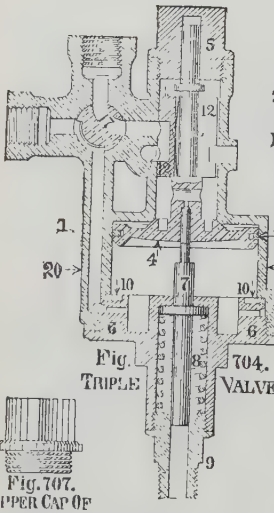


Fig. 704. TRIPLE VALVE.

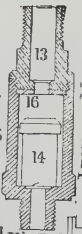


Fig. 705. LEAKAGE VALVE.

Fig. 714. SLIDE VALVE FOR TRIPLE VALVE

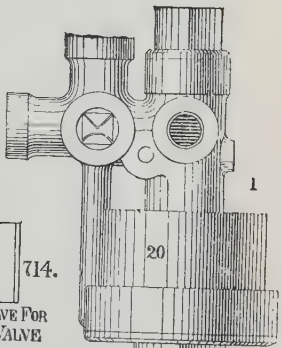


Fig. 703. TRIPLE VALVE.

Fig. 707. UPPER CAP OF TRIPLE VALVE.

Fig. 713. PISTON PACKING RING OF TRIPLE VALVE.

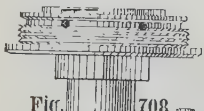


Fig. 708. MAIN CAP OF TRIPLE VALVE.

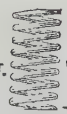


Fig. 710. GRADUATING SPRING OF TRIPLE VALVE.

Fig. 711. LOWER CAP OF TRIPLE VALVE.

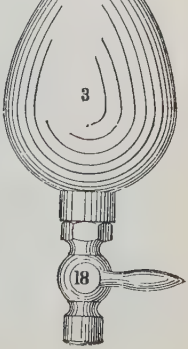


Fig. 709. GRADUATING STEM OF TRIPLE VALVE.

Fig. 706. TRIPLE VALVE PISTON.

Fig. 712. RUBBER PACKING RING OF TRIPLE VALVE

TRIPLE-VALVE, FOR WESTINGHOUSE-BRAKE.

List of Names of the Parts of the Triple and Leakage Valves of the Westinghouse-brake Designated by the Numbers in Figs. 703–705.

1. *Triple-valve.*
2. *Leakage-valve.*
3. *Drain-cup.*
4. *Triple-valve Piston.*
5. *Upper-cap, of Triple-valve.*
6. *Main-cap.*
7. *Graduating-stem.*
8. *Graduating-spring.*
9. *Lower-cap.*
10. *Rubber Packing-ring.*
11. *Piston Packing-ring.*
12. *Slide-valve.*
13. *Leakage-valve Cap.*
14. *Leakage-valve Plug.*
15. *Leakage-valve Case.*
16. *Rubber-seat, for Leakage-valve.*
17. *Four-way-cock Plug, for Leakage-valve.*
18. *Drain-cock.*
20. *Triple-valve Case.*

BRAKE-HOSE COUPLING, FOR WESTINGHOUSE-BRAKE.

List of Names of the Parts of the Brake-hose Clutch-couplings for Westinghouse-brake Designated by the Numbers in Figs. 715 and 716.

3. *Brake-hose Coupling-case.*
4. *Brake-hose Coupling-cap.*
5. *Brake-hose Coupling-valve.*
6. *Brake-hose Coupling-valve Spring.*
7. *Packing-ring Washer.*
8. *Packing-ring.*
10. *Brake-hose-coupling Packing-expander.*

For list of names of the parts designated by the numbers in the engravings, see page 467.

Fig. 726. ARMORED BRAKE-HOSE.

WESTINGHOUSE TENDER-BRAKE CYLINDER.

LIST OF NAMES OF THE PARTS OF THE BRAKE-CYLINDER FOR WESTINGHOUSE TENDER-BRAKE DESIGNATED BY THE NUMBERS IN FIGS. 727 AND 728.

2. *Cylinder-body, for Tender-brake.*
3. *Piston, for Tender-brake.*
3'. *Piston-head, for Tender-brake.*
3''. *Piston-rod, for Tender-brake.*
4. *Back Cylinder-head, for Tender-brake.*
5. *Front Cylinder-head, for Tender-brake.*
6. *Piston-sleeve, for Tender-brake.*
7. *Piston Follower-plate, for Tender-brake.*
8. *Piston Packing-leather, for Tender-brake.*
9. *Piston Follower-bolt for Tender-brake.*
10. *Piston-packing Expander, for Tender-brake.*

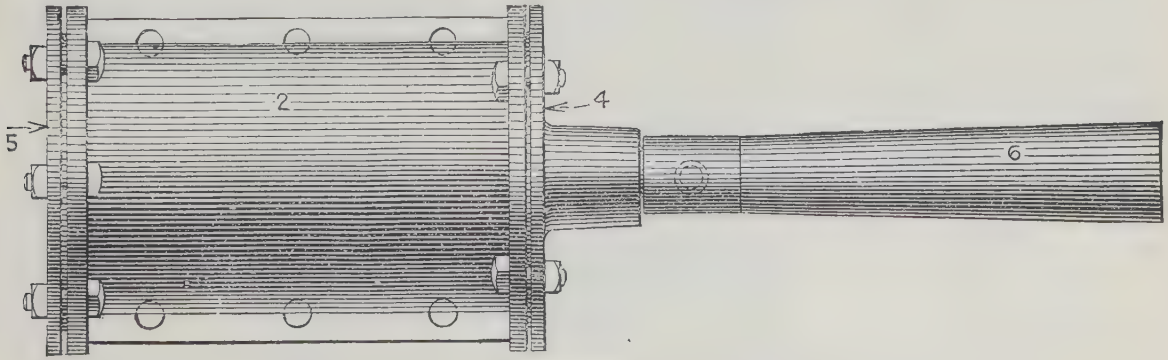


Fig. 727. BRAKE-CYLINDER, *for Westinghouse Automatic Tender-brake.*

For list of names of the parts designated by the numbers in the engraving, see page 469.

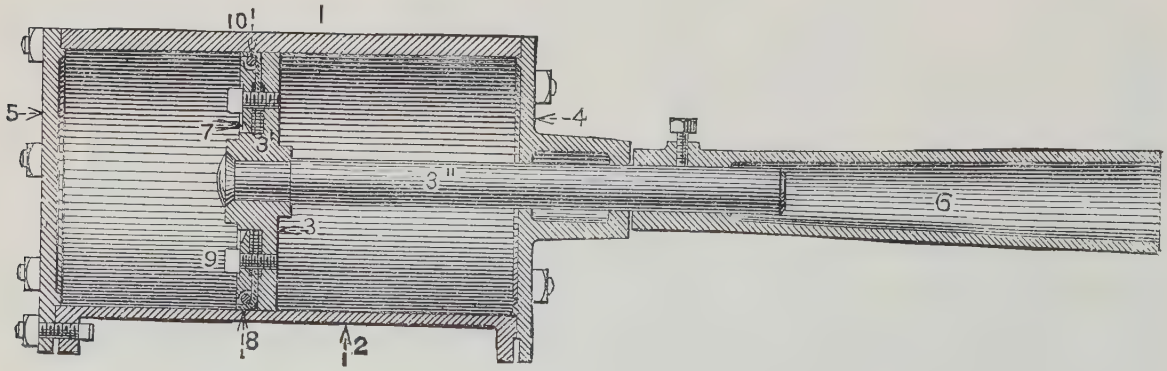


Fig. 728.

BRAKE-CYLINDER,

For Westinghouse Automatic Tender-brake

Section.

For list of names of the parts designated by the numbers in the engraving, see page 472.

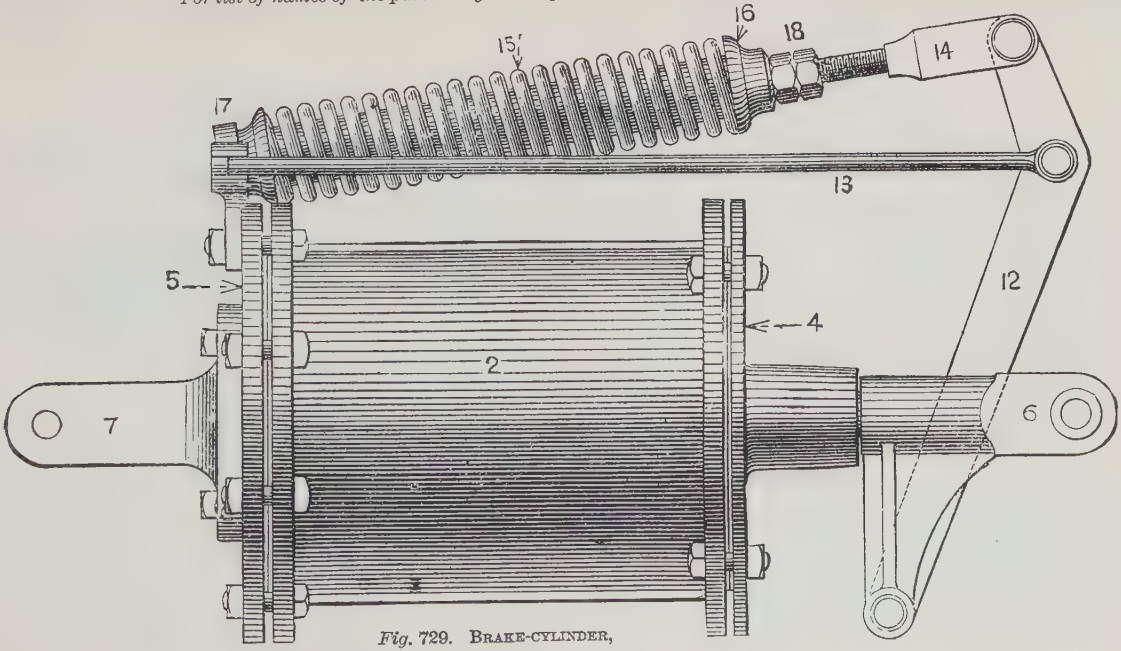


Fig. 729. BRAKE-CYLINDER,
For Westinghouse Automatic Car-brake. Inverted Plan.

WESTINGHOUSE CAR-BRAKE CYLINDER

LIST OF NAMES OF THE PARTS OF BRAKE-CYLINDERS FOR WESTINGHOUSE AUTOMATIC CAR-BRAKE, DESIGNATED BY THE NUMBERS IN FIGS. 725 AND 730.

2. *Cylinder-body, for Car-brake.*
3. *Piston, for Car-brake.*
3′. *Piston-head, for Car-brake.*
3″. *Piston-rod, for Car-brake.*
4. *Back Cylinder-head, for Car-brake.*
5. *Front Cylinder-head, for Car-brake.*
6. *Cross-head, for Car-brake.*
7. *Cylinder-lever Bracket, for Car-brake.*
8. *Piston Follower-plate, for Car-brake.*
9. *Piston Packing-leather, for Car-brake.*
10. *Piston Packing-expander, for Car-brake.*
11. *Piston Follower-bolt, for Car-brake.*
12. *Release-lever, for Car-brake.*
13. *Release-lever Rod, for Car-brake.*
14. *Release-spring Rod, for Car-brake.*
15. *Release-spring, for Car-brake.*
16. *Release-spring Washer, for Car-brake.*
17. *Release-spring Bracket, for Car-brake.*
18. *Release-spring Nuts, for Car-brake.*

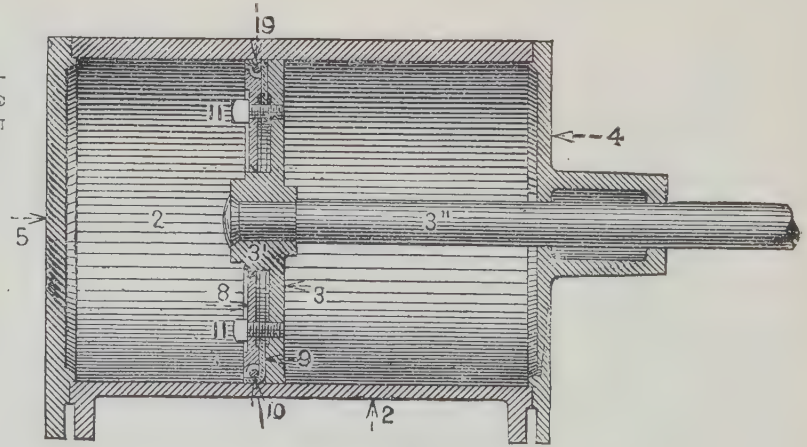


Fig. 730.
BRAKE-CYLINDER,
For Westinghouse Automatic Car-brake,
Section.

Fig. 731.

CHECK-VALVE.

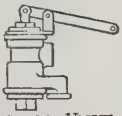
Fig. 732.

SAFETY-VALVE.

Fig. 733.

STOP-COCK.

Fig. 734.



CONDUCTORS-VALVE.

Fig. 735.

DOUBLE CHECK-VALVE.

Fig. 736.

THROTTLE-VALVE.

Fig. 737.

LEAKAGE-VALVE.

Fig. 738.

AIR-GAUGE.

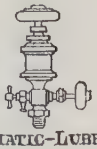
Fig. 739.

OIL-CUP FOR AIR-CYLINDER.

Fig. 740.

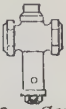
DRAIN-COCK.

Fig. 741.



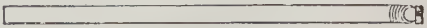
AUTOMATIC-LUBRICATOR.

Fig. 742.



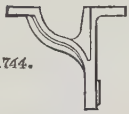
CHECK AND SAFETY-VALVE FOR DRIVING-WHEEL-BRAKE

Fig. 743.



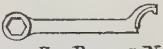
TENDER-HOSE.

Fig. 744.



TENDER-SPRING BRACKET.

Fig. 745.



WRENCH FOR PACKING-NUTS.

Fig. 746.

WRENCH FOR DISCHARGE-VALVE SEATS

WESTINGHOUSE DRIVING-WHEEL BRAKE.

List of Names of the Parts of Westinghouse Driving-wheel Brake Designated by the Numbers in Figs. 747–749.

1. *Cylinder, for Driving-wheel Brake.*
2. *Cylinder-body, for Driving-wheel Brake.*
3. *Piston, for Driving-wheel Brake.*
3′. *Piston-head, for Driving-wheel Brake.*
3″. *Piston-rod, for Driving-wheel Brake.*
4. *Bottom Cylinder-head, for Driving-wheel Brake.*
5. *Top Cylinder-head, for Driving-wheel Brake.*
6. *Cross-head, for Driving-wheel Brake.*
7. *Piston follower, for Driving-wheel Brake.*
8. *Piston Packing-leather, for Driving-wheel Brake.*
9. *Piston Packing-expander, for Driving-wheel Brake.*
10. *Piston Follower-bolt, for Driving-wheel Brake.*
11. *Piston-rod Packing-nut, for Driving-wheel Brake.*
12. *Piston-rod Packing-leather, for Driving-wheel Brake.*
13. *Eccentric-lever, complete, for Driving-wheel Brake.*
15. *Eccentric-lever Casting, for Driving-wheel Brake.*
16. *Brake-shoe, for Driving-wheel Brake.*
17. *Brake-block, for Driving-wheel Brake.*
18. *Eccentric-lever Nut, for Driving-wheel Brake.*
19. *Eccentric-lever Stud, for Driving-wheel Brake.*
23. *Brake-block Suspending-link, for Driving-wheel Brake.*
24. *Brake-block Suspending-plate, for Driving-wheel Brake.*
25. *Brake-block Suspending-stud, for Driving-wheel Brake.*
26. *Brake-block Pin, for Driving-wheel Brake.*
27. *Brake-block Pin-rod, for Driving-wheel Brake.*
28. *Eccentric-lever Links, for Driving-wheel Brake.*

For list of names of the parts designated by the numbers in the engravings, see page 474.

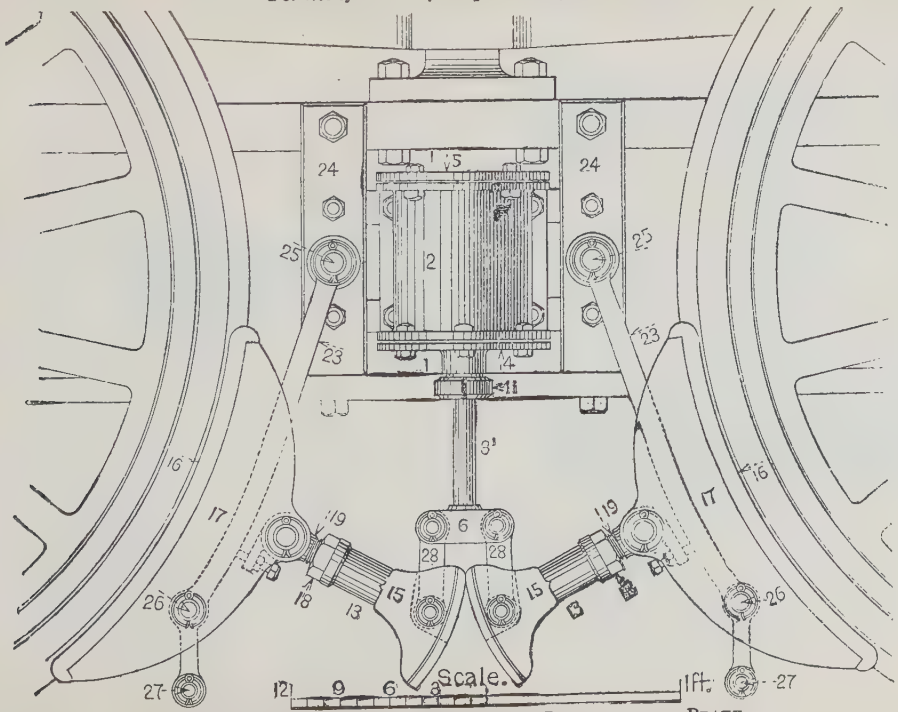


Fig. 47. Side View. WESTINGHOUSE DRIVING-WHEEL BRAKE.

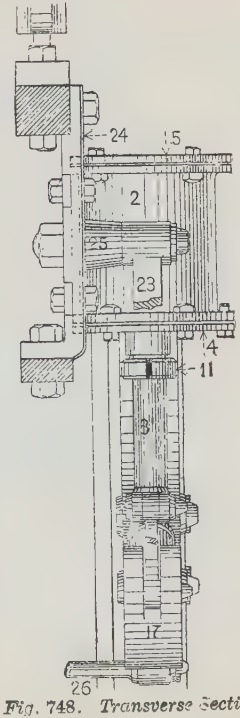


Fig. 748. Transverse Section.

For list of names of the parts designated by the numbers in the engraving, see page 474.

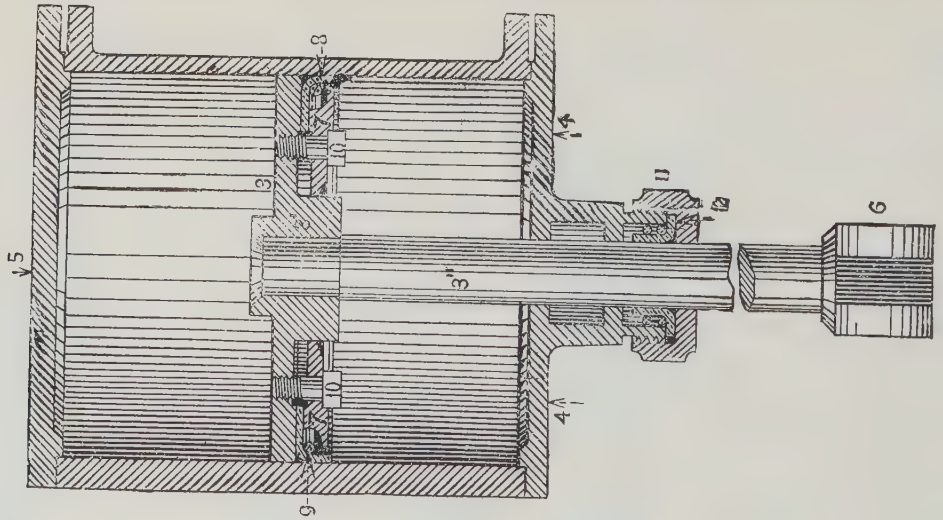


Fig. 749.

BRAKE-CYLINDER,

For Westinghouse Driving-wheel Brake.

Section.

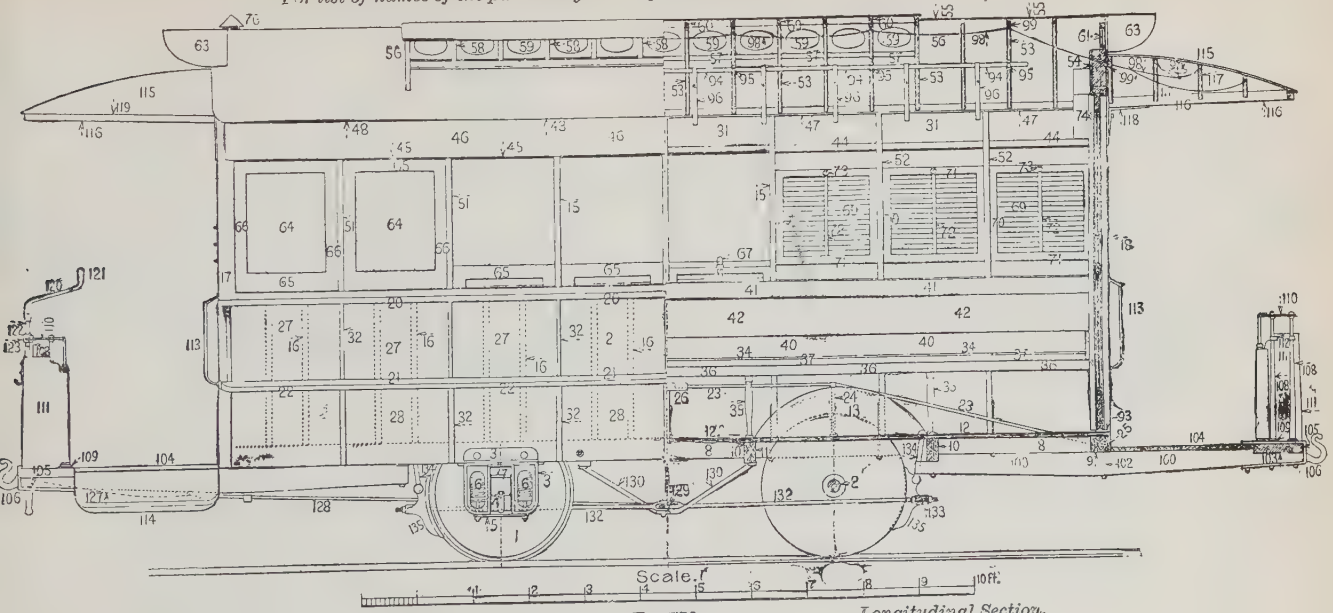
STREET-CARS.

List of Names of the Parts of Street-cars Designated by the Numbers in Figs. 750–753.

1. *Street-car Wheel.*
2. *Street-car Axle.*
3. *Pedestal.*
4. *Journal-box.*
5. *Jaw-bit.*
6. *Side Journal-spring.*
7. *Spring-saddle.*
8. *Sill.*
9. *End-sill.*
10. *Transverse Floor-timber.*
11. *Sill Tie-rod.*
12. *Floor.*
13. *Wheel-box.*
14. *Wheel-box Button.*
15. *Window-post.*
16. *Stud.*
17. *Corner-post.*
18. *Door-post.*
19. *Belt-rail.*
20. *Belt-rail Band.*
21. *Fender-rail.*
22. *Fender-guard.*
23. *Inverted Body-truss-rod.*
24. *Inverted Body-queen-post.*
25. *Inverted Truss-rod-plate.*
26. *Turnbuckle.*
27. *Outside-panel.*
28. *Lower Outside-panel.*
29. *Upper End-panel.*
30. *Lower End-panel.*
31. *Inside Frieze-panel.*
32. *Panel-strip.*
33. *Panel-furring.*
34. *Seat-bottom, and Longitudinal seat.*
35. *Seat-leg.*
36. *Front Seat-rail.*
37. *Front Seat-bottom-rail.*
38. *Back Seat-bottom-rail.*
39. *Back Seat-rail.*
40. *Lower Seat-back-rail.*
41. *Upper Seat-back-rail.*
42. *Seat-back Board.*
43. *End Seat-panel.*
44. *Upper Belt-rail.*
45. *Window-ledge.*
46. *Letter-board.*
47. *Plate.*
48. *Eaves-moulding.*
49. *Window-blind Rest.*
50. *Window-sash Rest.*
51. *Outside Window-stop.*
52. *Inside Window-stop.*
53. *Carline.*
54. *End carline.*
55. *Roof-boards.*
56—56. *Clear-story.*
57. *Clear-story Bottom-rail.*
58. *Clear-story Post.*
59. *Clear-story Window.*
60. *Clear-story Carline.*
61. *Clear-story End-ventilator.*
62. *End Roof-lights.*
63. *Ventilator-hood.*

64. *Window.*
65. *Window-rail.*
66. *Window-stile.*
67. *Window-lift.*
68. *Sash Parting-strip.*
69. *Window-blind.*
70. *Window-blind Stile.*
71. *Window-blind Rail.*
72. *Window-blind Mullion.*
73. *Window-blind Lift.*
74. *Lamp-case.*
75. *Lamp-case Door.*
76. *Lamp-case Chimney.*
77. *Window-guards.*
78. *Door-stile.*
79. *Door-mullion.*
80. *Door-window Mullion.*
81. *Middle or Lock Door-rail.*
82. *Top Door-rail.*
83. *Door-case Top-rail.*
84. *Door-case Intermediate-rail.*
85. *Door-case Top-panel.*
86. *Door-case Sash.*
87. *Door-case Sash-button.*
88. *Door Guard-band.*
89. *Fare-wicket and Fare-wicket Door.*
90. *Fare-wicket Door-case.*
91. *Sliding-door Handle.*
91.′ *Door-sheave.*
92. *Door-latch Plate.*
92.′ *Sliding-door Holder.*
93. *Door-sill.*
94. *Inside Hand-rail.*
95. *Inside Hand-rail Bracket.*
96. *Hand-straps.*
97. *Signal-bell.*
98. *Bell-strap.*
99. *Bell-strap Guide.*
99.′ *Bell-strap Guide, with Roller.*
100. *Draw-timber.*
102. *Platform-timber Clamps.*
103. *Platform End-timber.*
104. *Platform, or Platform-floor.*
105. *Platform-timber Band.*
106. *Draw-hook.*
107. *Helper-ring.*
108. *Platform-post.*
109. *Base-washer, for Platform-post.*
110. *Platform-rail.*
111. *Dash-guard.*
112. *Dash-guard Straps.*
113. *Body Hand-rail.*
114. *Platform-step, or Side-step.*
115. *Platform-hood.*
116. *Platform-hood Bow.*
117. *Platform-hood Carline.*
118. *Platform-hood Knee.*
119. *Platform-hood Moulding.*
120. *Brake-shaft Crank.*
121. *Brake-shaft Crank-handle.*
122. *Brake-shaft.*
123. *Upper Brake-shaft Bearing.*
124. *Lower Brake-shaft Bearing.*
125. *Brake Ratchet-wheel.*
126. *Brake-pawl.*
127. *Brake-shaft Chain.*
128. *Brake-shaft Connecting-rod.*
129. *Centre Brake-lever.*
130. *Centre Brake-lever Spider.*
132. *Secondary Brake-rod.*
133. *Brake-beam.*
134. *Brake-hanger.*
135. *Brake-head.*
136. *Rubber-tread.*

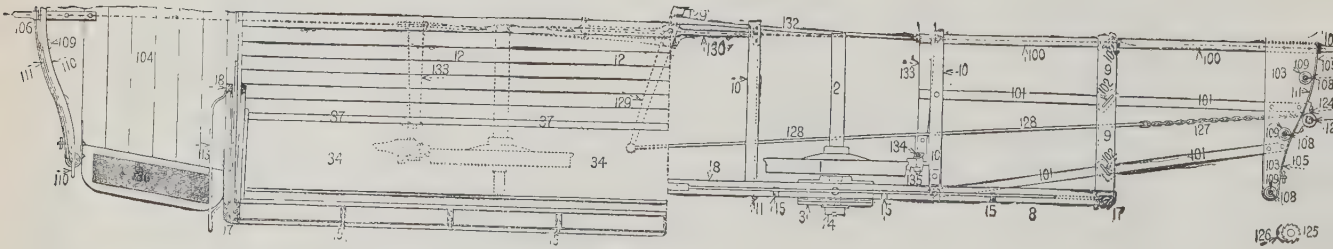
For list of names of the parts designated by the numbers in the engraving, see page 477.



Side View. *Longitudinal Section.*

Fig. 750.
STREET-CAR.

For list of names of the parts designated by the numbers in the engraving, see page 477.



Showing Floor-seats, etc. *Showing Framing.*

Fig. 731.

HALF-PLAN OF STREET-CAR.

For list of names of the parts designated by the numbers in the engravings, see page 477.

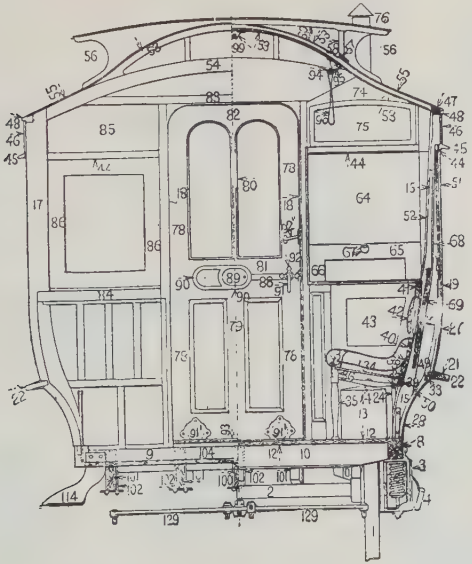


Fig. 752.

End View, showing Framing.

STREET-CAR.

Section.

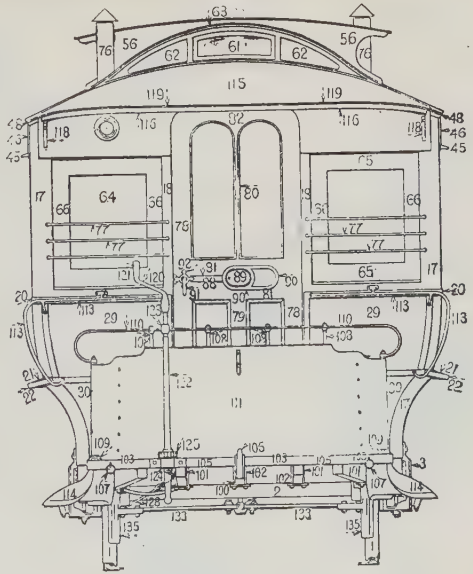


Fig. 753.

End View.

Fig. 754.
BELL-STRAP GUIDE.

Fig. 755.
BELL-STRAP GUIDE.

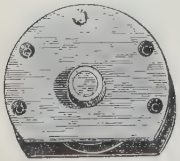


Fig. 764.
SLIDING-DOOR SHEAVE.

Fig. 767.
LAMP-CASE HOOK AND EYE.

Fig. 756.
BELL-STRAP GUIDE, WITH SCREW-TOP.

Fig. 765.
SLIDING-DOOR FRICTION-ROLLER.

Fig. 768.
ECCENTRIC WINDOW-BUTTON.

Fig. 757.
BELL-STRAP GUIDE, WITH ROLLER.

Fig. 758.
INSIDE HAND-RAIL BRACKET.

Fig. 769.
LAMP-CASE DOOR-HOLDER.

Fig. 759.
SLIDING-DOOR HANDLES.

Fig. 761. *Fig.* 760.
SLIDING-DOOR LATCH AND KEEPER.

Fig. 762.
SLIDING-DOOR HOLDER.

Fig. 763.
SLIDING-DOOR-HOLDER CATCH.

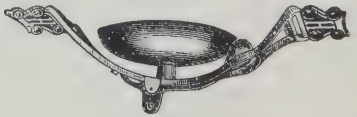


Fig. 766.
SIGNAL-BELL.

Fig. 770.
CLEAR-STORY WINDOW-PIVOT.

Fig. 771.
CLEAR-STORY WINDOW-PIVOT PLATE.

HAND-CARS.

List of Names of the Parts of Hand-cars Designated by the Numbers in Figs. 772–775.

1. *Hand-car Wheel.*
2. *Axle.*
3. *Journal-box.*
4. *Pinion.*
5. *Gear-wheel.*
6. *Crank-shaft.*
7. *Crank-shaft Bearings.*
8. *Sills.*
9. *End-sills.*
10. *Floor-timbers.*
11. *Cross-frame Tie-timber.*
12. *Seat.*
13. *Seat-bracket.*
14. *Seat-bracket Brace.*
15. *Seat-riser.*
16. *Floor.*
17. *Lever-frame Post.*
18. *Lever-frame Cap.*
19. *Hand-car Lever.*
20. *Lever-handle.*
21. *Lever-shaft.*
22. *Lever-shaft Bearings.*
23. *Bell-crank.*
24. *Connecting-rod.*
25. *Lever-frame Tie-rod.*
26. *Hand-car Truss-rod.*
27. *Brake-beam.*
28. *Brake-beam Hanger.*
29. *Brake-head.*
30. *Brake-rod.*
31. *Brake-lever.*
32. *Brake-lever Fulcrum.*

For list of names of the parts designated by the numbers in the engraving, see page 483.

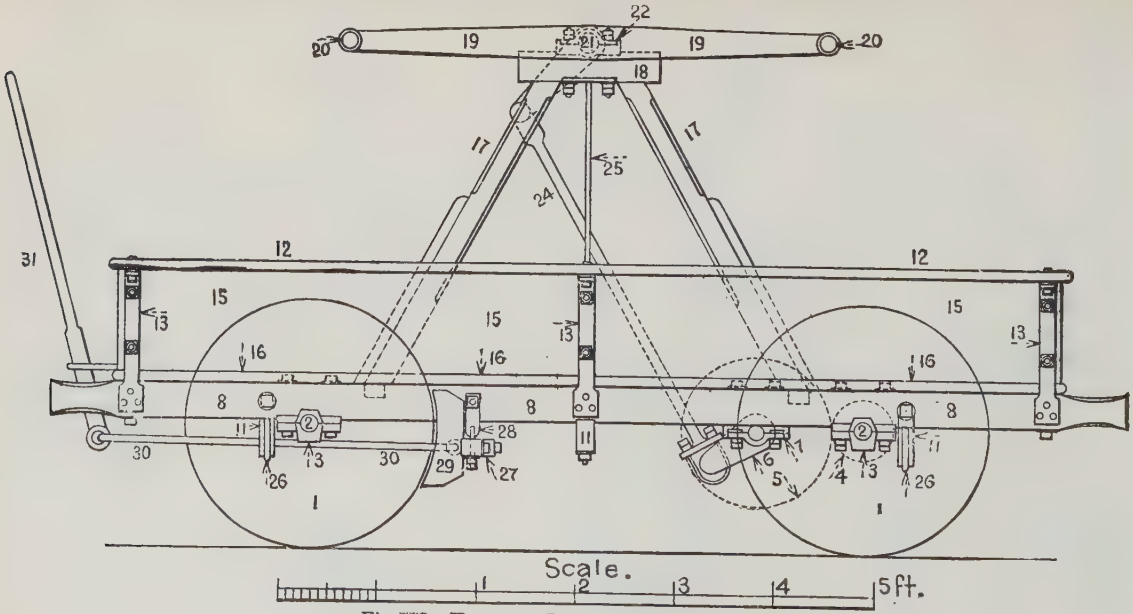


Fig. 772. HAND-CAR, PENNSYLVANIA RAILROAD.
Side View.

For list of names of the parts designated by the numbers in the engraving, see page 483.

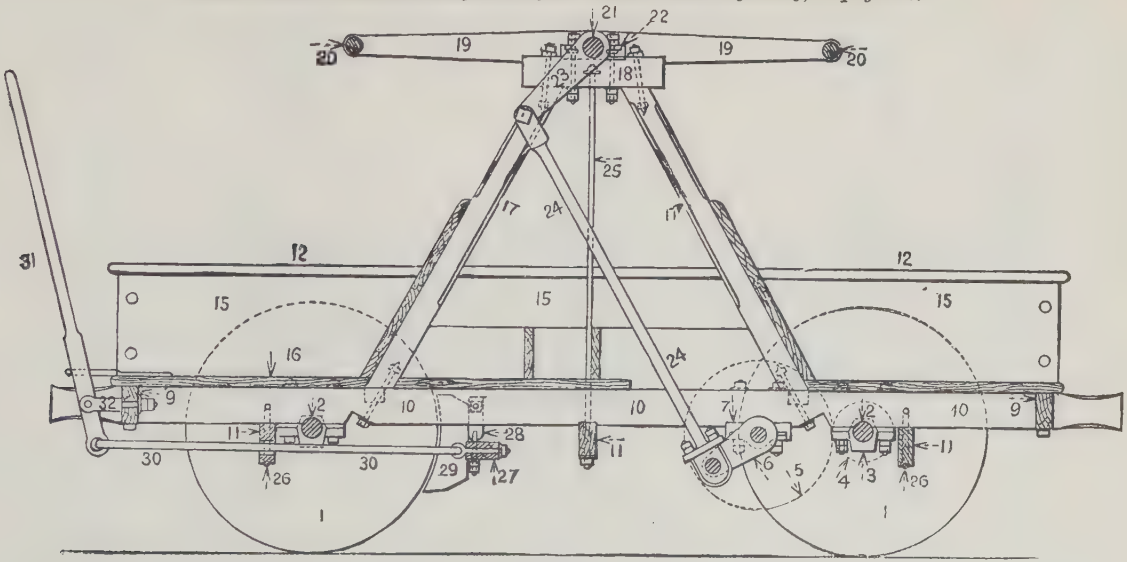


Fig. 773.

HAND-CAR, PENNSYLVANIA RAILROAD.

Longitudinal Section.

For list of names of the parts designated by the numbers in the engraving, see page 483.

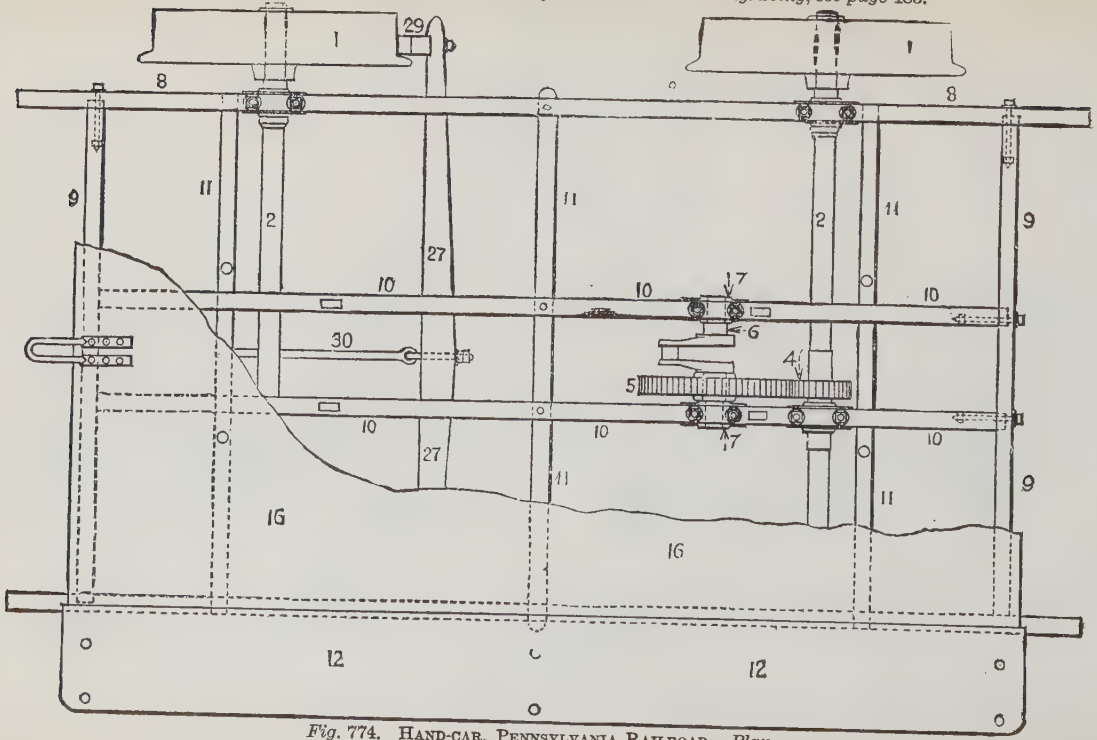


Fig. 774. HAND-CAR, PENNSYLVANIA RAILROAD. *Plan.*

For list of names of the parts designated by the numbers in the engraving, see page 483.

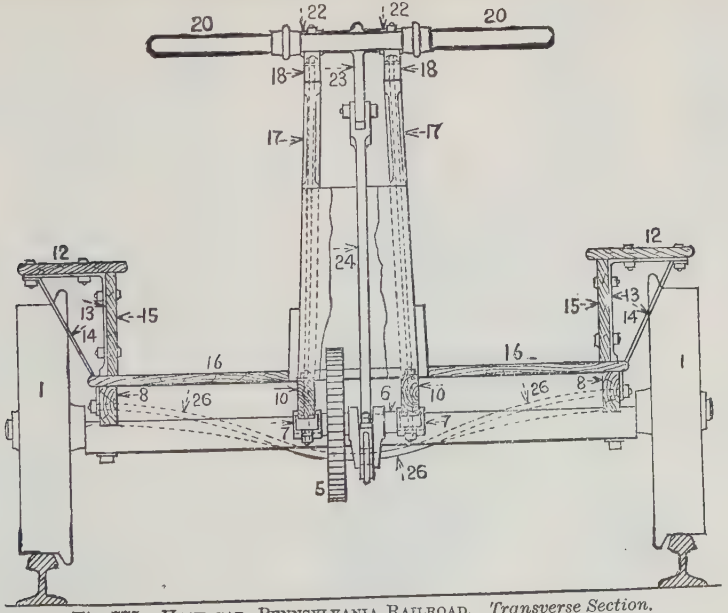


Fig. 775. HAND-CAR, PENNSYLVANIA RAILROAD. *Transverse Section.*

Fig. 776.
MACHINE-BOLT, *Square-head.*

Fig. 777.
MACHINE-BOLT, *Hexagon-head.*

Fig. 778.
CARRIAGE-B

Fig. 779.
LAG-SCREW.

Fig. 780.
LUG-BOLT.

Fig. 781.
U-BOLT.

Fig. 782.
KEY-BOLT.

Fig. 784.
EYE-BOLT.

Fig. 785.
WASHER, OR PLATE-WASHER.

Fig. 786.
BEVELED-WASHER.

Fig. 789.
DOUBLE-WASHER.

Fig 783.
JOINT-BOLT.

Fig. 787.
TRIANGULAR-WASHER.

Fig. 788.
SOCKET-WASHER.

Fig. 792.
CAR-WASHER.

Fig. 790.
SINGLE-SCREW TURNBUCKLE.

Fig. 791.
RIGHT AND LEFT SCREW TURNBUCKLE.

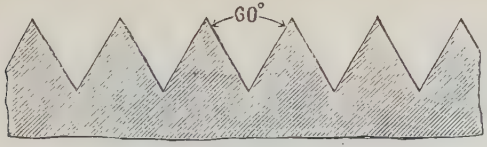


Fig. 794.

ENLARGED SECTION OF V SCREW-THREAD.

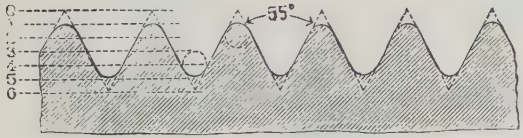


Fig. 795.

ENLARGED SECTION OF WHITWORTH SCREW-THREAD.

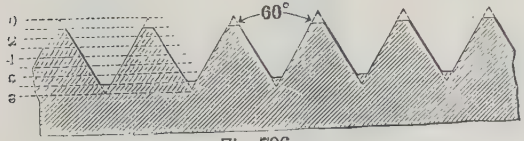


Fig. 796.

ENLARGED SECTION OF SELLERS SCREW-THREAD.

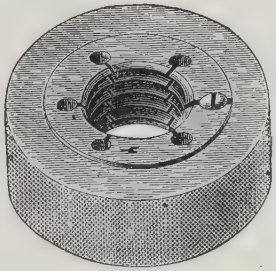


Fig. 797.

EXTERNAL SCREW-GAUGE.

Fig. 798.

INTERNAL SCREW-GAUGE.

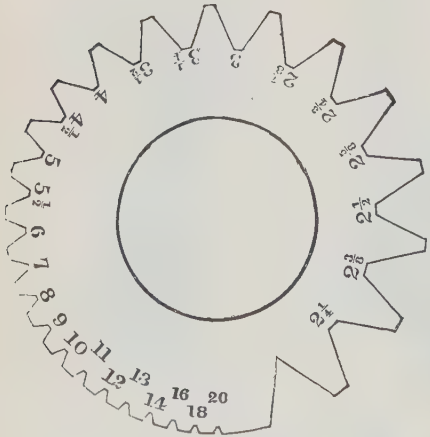


Fig. 799.
SCREW-THREAD GAUGE.

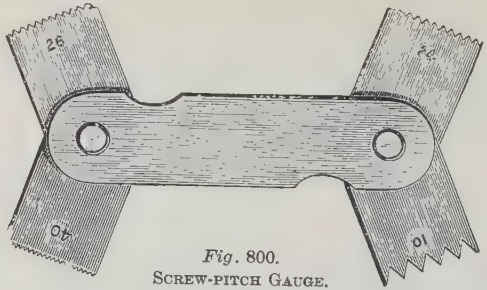


Fig. 800.
SCREW-PITCH GAUGE.

Fig. 801.
HYDRAULIC JACK.

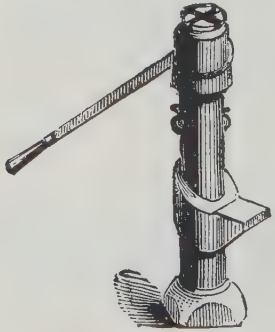


Fig. 802.
HYDRAULIC JACK.

Fig. 803.
BLOCK, OR PULLEY-BLOCK.

TRUSSES.

LIST OF THE NAMES OF THE PARTS OF TRUSSES DESIGNATED BY THE NUMBERS IN FIGS. 804–811.

1. *Truss-rod.*
2. *Truss-rod Washer.*
3. *Truss-rod Bearing.*
3.′ *Truss-rod Saddle.*
4. *Truss-block.*
5. *King-post.*
6. *Queen-post.*
7. *Skew-back.*
8. *Brace.*
9. *Counter-brace.*
10. *Brace-rod.*
11. *Counter-brace Rod.*
12. *Post.*
13. *Top-chord.*
14. *Lower-chord.*
15. *Vertical-rod.*

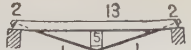


Fig. 804.

KING-POST TRUSS.

Fig. 805.

KING-POST TRUSS.

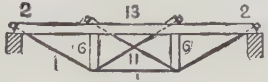


Fig. 806.

QUEEN-POST TRUSS.

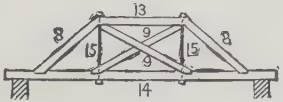


Fig. 807.

QUEEN-POST TRUSS.

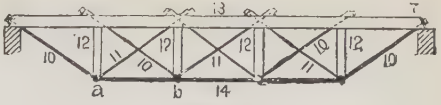


Fig. 808.

PRATT OR WHIPPLE TRUSS.

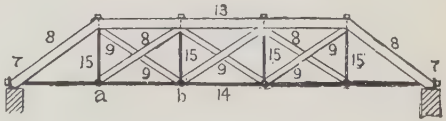


Fig. 809.

HOWE-TRUSS.

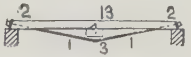


Fig. 810.

TRUSSED-BEAM.

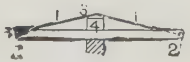


Fig. 811.

TRUSSED-BEAM.

ADVERTISEMENTS.

[*See the Index to Advertisements following the Preface.*]

PERFECTLY

SELF-FITTING JOURNAL BEARINGS

PATENTED BY D. A. HOPKINS,

November 15, 1870.

These Bearings are made with an auxiliary bearing, usually a thin lining of lead, secured to the hard metal bearing and constituting a yielding mould into which the journal quickly imbeds and fits itself by pressure; the lining yielding and adjusting itself to the size and form of the journal to which the bearing is applied before the pressure becomes great enough at any point to expel the oil from between the journal and bearing, and thereby cause heating.

Both the Eastern and Western Railroad Associations, together with other high authorities in Patent Cases, after a full and thorough examination of the Hopkins Patent for **Self-Fitting** *Journal Bearings (dated November 15, 1870), and of the facts and proofs as to priority of the invention of said Bearings, have conceded the validity and defensibility of said Patent. (It will surely be defended.)*

All parties are hereby cautioned against the use of **Self-Fitting** Journal Bearings, unless procured from said Hopkins, or from other manufacturers duly licensed by him, whether said bearings purport to be lined with pure lead or not, and whether the lining is held in place on the hard metal bearing by soldering or by any other means.

The Patent is for the SELF-FITTING Bearing and not for any special mode of securing the lining in place, and is not restricted to the use of pure lead as a lining.

Steer clear of Pirates and Frauds; they will use honest men for their own advantage, desert them when legal trouble comes, and will, in nearly all cases, palm off an inferior article. Their dishonesty toward inventors is nearly certain to be extended to *all* their transactions.

In ordering, send pattern of bearing, and state length and diameter of journal (when new.) Before applying bearings, carefully remove from the journal all rust and dried paint. DO NOT TRY TO FIT THE BEARING TO THE JOURNAL. IT WILL FIT ITSELF.

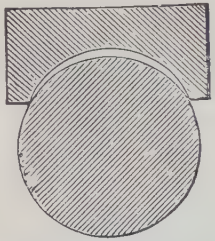
Orders respectfully solicited and promptly filled by the undersigned, as well as by authorized manufacturers; a list of whom will be furnished on application, to

D. A. HOPKINS, Patentee and Manufacturer,

No. 113 Liberty Street, New York.

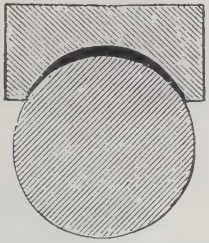
The following cuts illustrate the working of Lead-Lined Bearings; the *heavy black line* showing the lead lining, which, in bearings for use, is best when made about one-sixteenth of an inch thick.

Bearing not Lead-Lined.



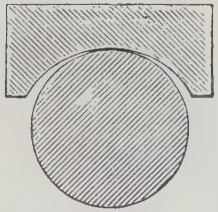
Bearing too small for Journal. Binds on the sides. Sure to run hot.

Bearing Lead-Lined.



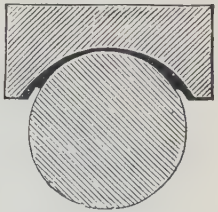
Bearing too small for Journal. Lead pressed from sides fills up along the centre. Sure to run cool.

Bearing not Lead-Lined.



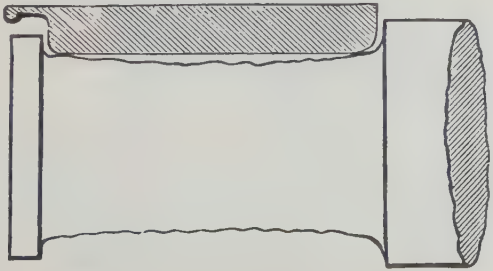
Journal worn small, Bearing touches only along centre of top. Likely to run hot.

Bearing Lead-Lined.



Journal worn small. Lead pressed from centre fills up along sides. Sure to run cool.

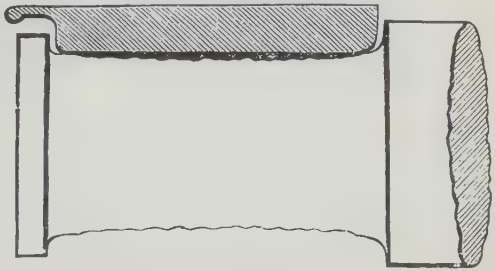
Bearing not Lead-Lined.



Journal cut, rough, and small. Sure to run hot.

[OVER.]

Bearing Lead-Lined.

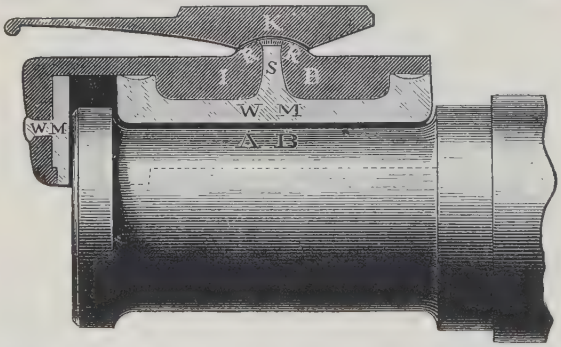


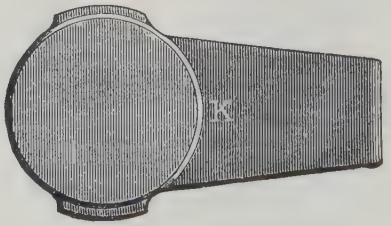
Journal cut, rough, and small, but sure to run cool.

The following cuts illustrate a construction and form of journal-bearing and key by which, as compared with the bearing and key of usual construction, the following objects are secured, viz.: Diminished first cost of bearing, without decrease in its durability. Greatly reduced cost of renewing worn bearings. Exemption from ruinous cutting of the journal and breaking of the bearing in case of the journal becoming heated. Perfect alignment of the bearing with the journal from the first. Proper distribution of weight along the journal at all times, whether the journal-box does or does not tip. Diminished liability to heating of the journal, and greatly increased durability of the bearing. An essential reduction in power required to move trains.

EXPLANATION OF ENGRAVINGS.

K is the key, its back being made circular to fit a corresponding recess cast in the under side of the top of the box, while its under side has a rounded recess running across it for receiving the rounded ridge *R R*, running across the back of the bearing, and upon which the load





upon the bearing is always received, and thence properly distributed along the journal. Said key readily turns laterally with the bearing, to enable the latter to conform to the alignment of the journal. *1 B* is the back or load-carrying part of the bearing, and is made of steel or of the strongest soft cast iron. In the bearing, *W M* is the wearing or anti-friction metal for the wear of the journal, and, as shown in this case, is a solid brass casting, with a flange at each end for the wear of the collars of the journal, until the intermediate part is worn out by the journal. *A B* is the soft lining of the bearing, by which it is made self-fitting. At the end of the axle, *W M* is a removable plate of brass for receiving and restricting the end thrust of the axle, which is thereby kept within desirable limits. When the wearing metal, *W M*, is worn out, a new one is substituted in its place, the same back, *1 B*, being used. Thousands of these backs are now in use, in which the wearing metal has been many times renewed. The pendant lip at the outer end of the bearing may be omitted when desirable. These *backs, made as above, never break.* Orders respectfully solicited and promptly filled by D. A. HOPKINS, 113 Liberty Street, New York, Patentee and Sole Manufacturer.

THE BEST CHEAP JOURNAL BEARINGS ever offered to the public are THE HOPKINS COMBINATION BEARINGS.

They appear to be just what they are, instead of being, like so-called cheap brass bearings, made up of a villainous mixture, in which every element of real excellence and reliability is sacrificed in the effort to make them appear like really good metal.

They wear the journal as little, if not less, than any others.

They are less likely to cause heating of the journal than the best brass bearings.

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Their cost is only about one-half that of brass bearings.

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They cost less to renew, when worn, than any others.

They are made to fit any form of journal-box, but cannot, with safety, be made as thin as brass bearings are sometimes made.

Before applying them, remove from the journal all rust and dried paint.

In ordering, send tracing of the journal (when new) for which they are wanted, as well as of brass bearings used.

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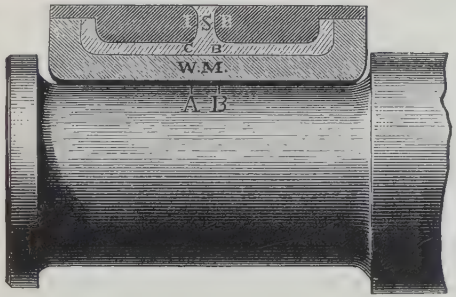

Fig. 1.

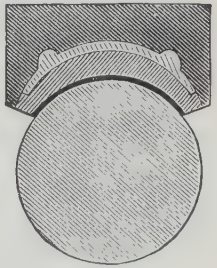

Fig. 2.

In the above cuts, fig. 1 is a longtitudinal section, along the centre, of the Hopkins Combination Bearing, and fig. 2, is a cross section of the same near the centre thereof.

I, B, is the back, or load-carrying part of the bearing, and is made of the strongest soft cast-iron, or of steel. *C, B*, is a contingent bearing made of the best brass for journal bearings, and is secured to said back by a spur *S*, riveted into the back. *W, M*, is the wearing (or anti-friction) metal, part of the bearing thoroughly held in its place, and designed to receive the principal wear of the journal. The dark heavy line, *A, B*, is the auxiliary, or self-fitting, part of the bearing. The wearing metal, *W M*, is a very hard and remarkably good anti-friction metal, requiring a red heat to melt it. In case of the journal becoming so extremely hot as to melt out the wearing metal (*W M*), the journal will be received and run upon the contingent (brass) bearing, which, being supported and held in place by the iron back, cannot be broken, or escape from its position, and will last to run thousands of miles.

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FOR RAILWAY CARS AND ENGINES.

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Patent pronounced valid by both the Eastern and Western Railroad Associations.

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(either self-fitting or plain), which greatly obviate the end-wear caused by the collar and shoulder of the axle, and the thrust and jarring caused thereby.

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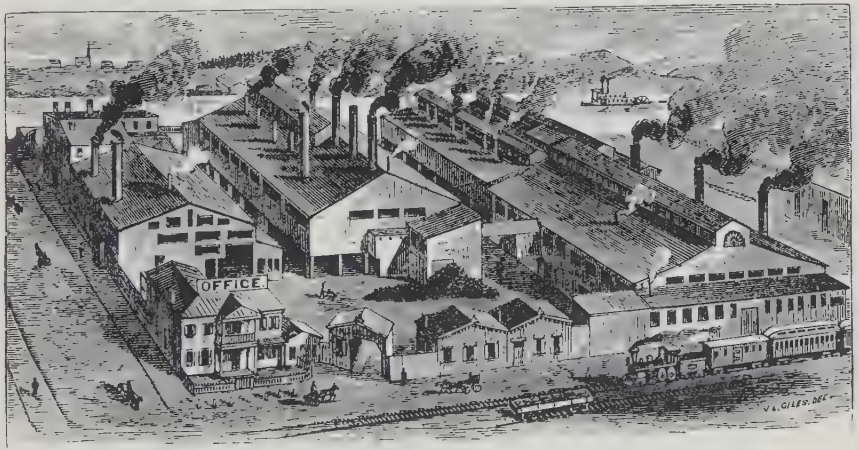

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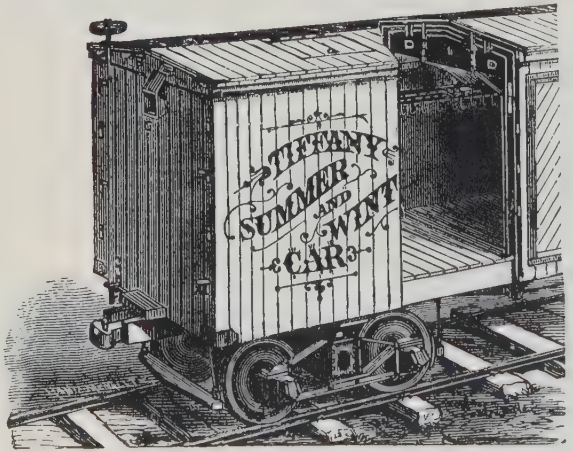

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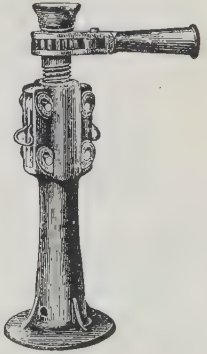

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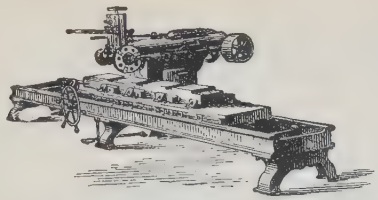

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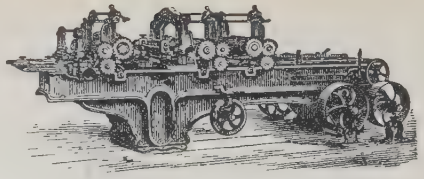

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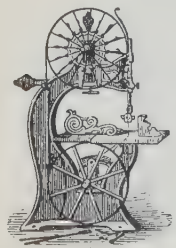

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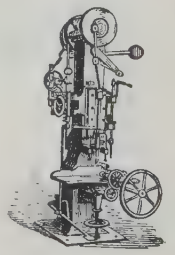

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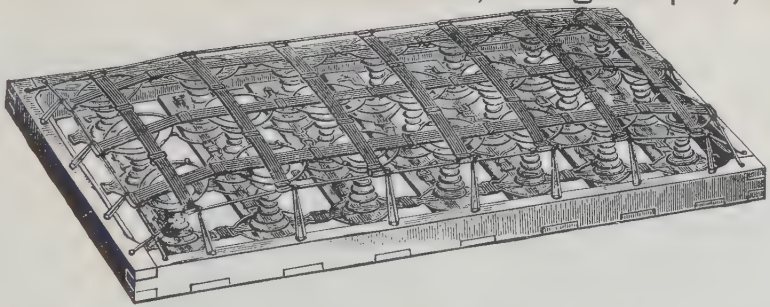

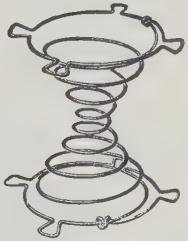

These Springs are made of the best STEEL SPRING WIRE, coiled small enough so that a large number can be used in a seat, and made with four eyes at each end (as shown in the smaller engraving) by means of which they are closely and firmly connected together, forming a *smooth* and *continuous* surface, and making a **LIGHTER, SOFTER, STRONGER** and **CHEAPER** seat, seat-back, or bunk than any other. These Springs have been thoroughly tested by long use, and thousands of them are now in daily wear. They are in use on the following lines:

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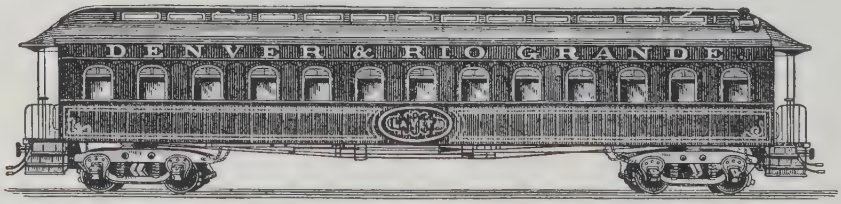

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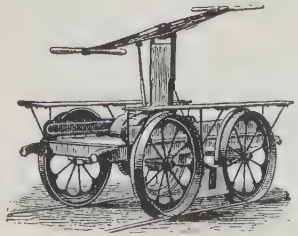

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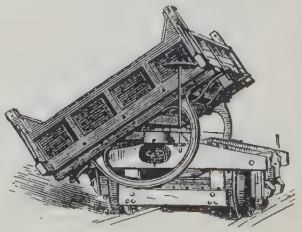

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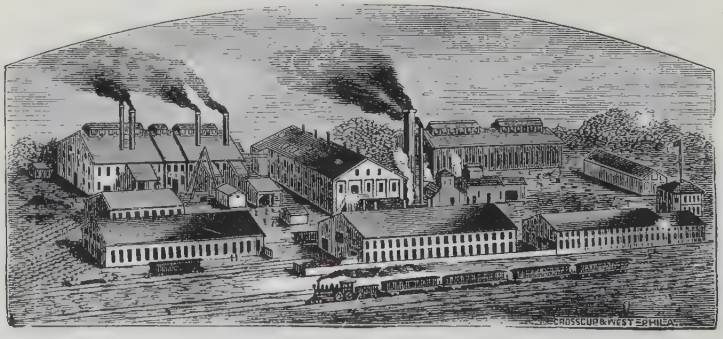

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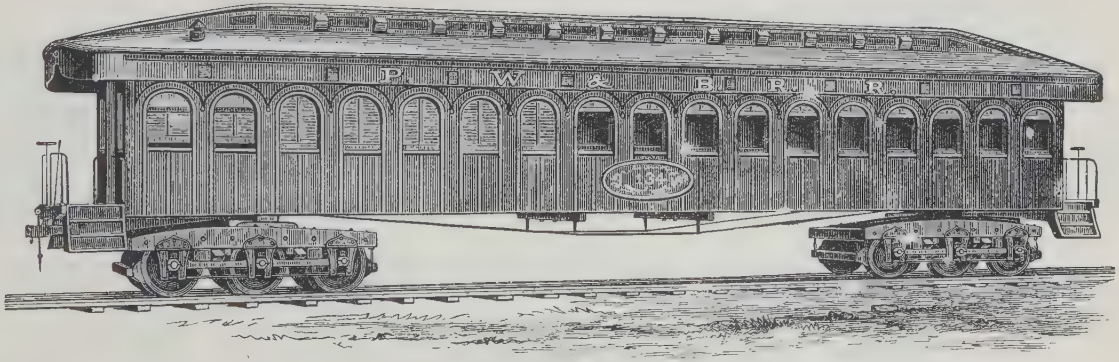

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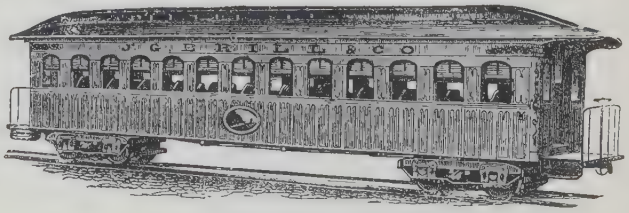

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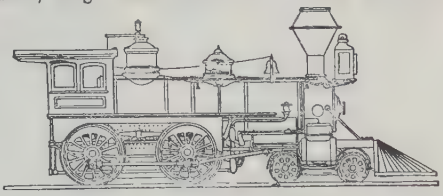
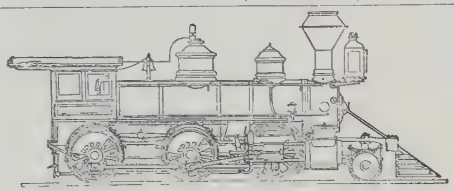


"AMERICAN" PATTERN.

Class designation.	Gauge of track.	Cylinder	Diameter of drivers.	Weight in working order. On drivers.	Weight in working order. Total.	Load in tons (of 2,240 lbs.) of cars and lading. On a level.	On grade per mile of 20 ft.	40 ft.	60 ft.	80 ft.	100
8—14 C	3 or 3 ft. 6 in.	10x16	40 to 44 in.	21,000	32,000	525	245	1 0	105	80	65
8—16 C	"	11x16	"	23,000	35,000	600	280	175	125	95	75
8—18 C	"	12x16	"	25,000	38,000	665	310	195	140	1 5	85
8—20 C	"	13x16	"	30,000	44,000	750	350	215	155	115	90
8—18 C	4 ft. 8½ or 5	12x22	50 to 56 in.	29,000	46,000	665	310	195	140	105	85
8—20 C	"	13x24	56 to 66 in.	35,000	57,000	740	340	215	155	115	90
8—22 C	"	14x24	"	38,000	60,000	835	380	2 0	170	125	100
8—24 C	"	15x24	"	41,000	63,000	930	430	270	1 0	140	110
8—26 C	"	16x24	"	41,000	66,000	1,000	460	290	205	150	120
8—28 C	"	17x24	"	48,000	71,000	1,100	525	318	2 8	169	135
8—30 C	"	18x24	"	51,000	75,000	1,200	575	350	2 3	188	150

FREIGHT LOCOMOTIVE.

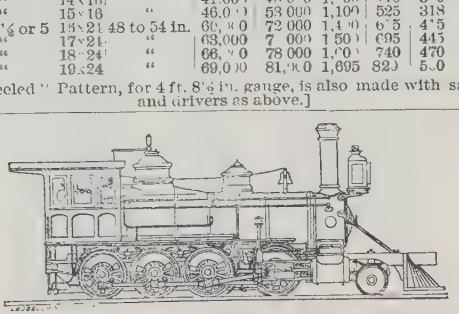


"MOGUL" PATTERN.

8—16 D	3 or 3 ft. 6 in.	11x16	36 to 40 in.	29,000	35,000	700	335	210	150	110	90
8—18 D	"	12x16	"	33,000	39,000	840	390	250	180	135	110
8—20 D	"	13x16	"	37,000	44,000	960	445	285	205	160	125
8—22 D	"	14x16	"	41,000	48,000	1,000	470	300	225	165	130
8—24 D	"	15x16	"	46,000	53,000	1,100	525	318	2 8	1 0	145
8—26 D	4 ft. 8½ or 5	15x21	48 to 54 in.	60,000	72,000	1,400	675	435	300	2 0	180
8—28 D	"	17x24	"	63,000	77,000	1,500	695	445	320	245	195
8—30 D	"	18x24	"	66,000	78,000	1,600	740	470	340	260	205
8—32 D	"	19x24	"	69,000	81,000	1,695	820	530	365	275	22

[The "Ten-Wheeled" Pattern, for 4 ft. 8½ in. gauge, is also made with same cylinders and drivers as above.]

FREIGHT LOCOMOTIVE

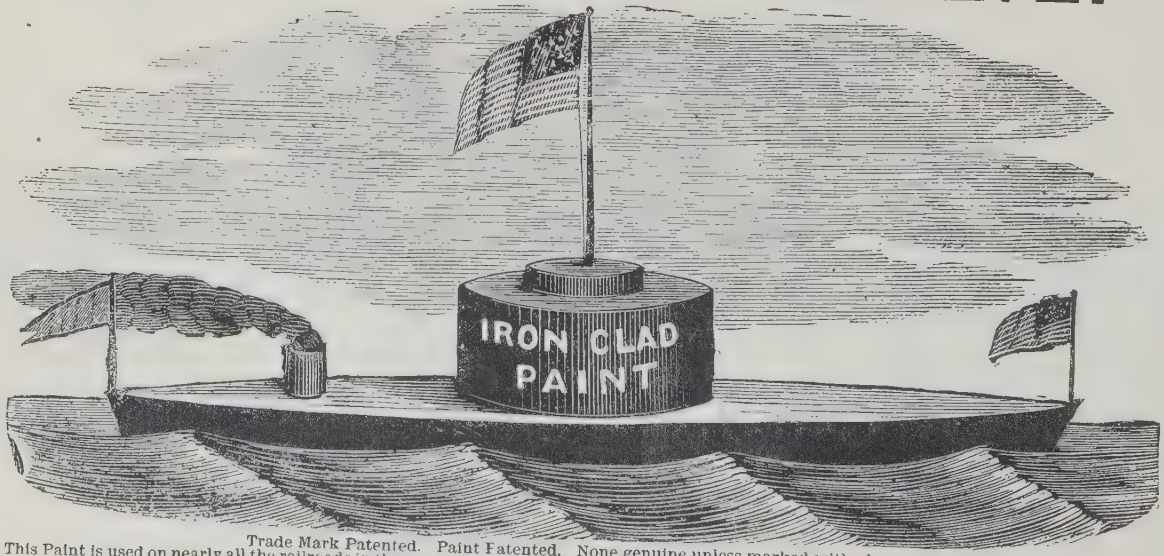


"Consolidation" PATTERN.

10—22 E	3 or 3 ft. 6 in.	14x16	36 in.	44,000	52,000	1,060	490	310	220	175	140
10—24 E	"	15x18	"	50,000	58,000	1 2 0	560	355	255	195	155
10—31 E	4 ft. 8½ or 5	2 2 x24	48 in.	88,000	102,000	2,000	9 0	6 5	460	3 0	285

IRON CLAD PAINT.

TRADE



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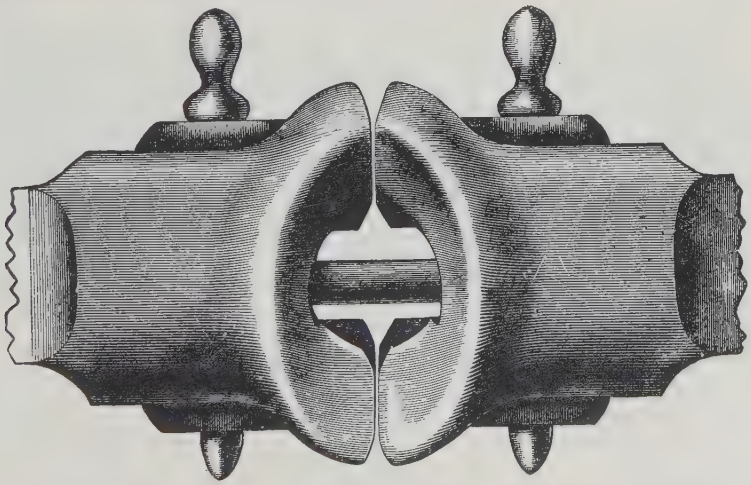

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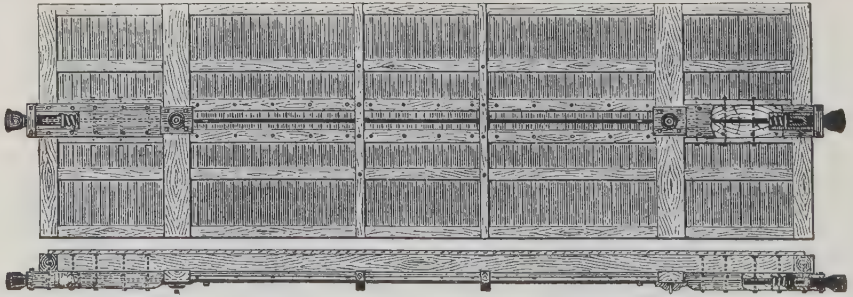

The above illustrates the true principle of pulling and method of attaching Draw-Bars; that is, pull your car together, instead of pulling it apart, as in the old method of attachments.

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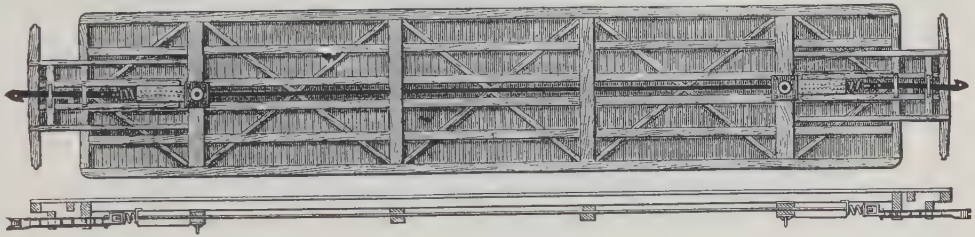

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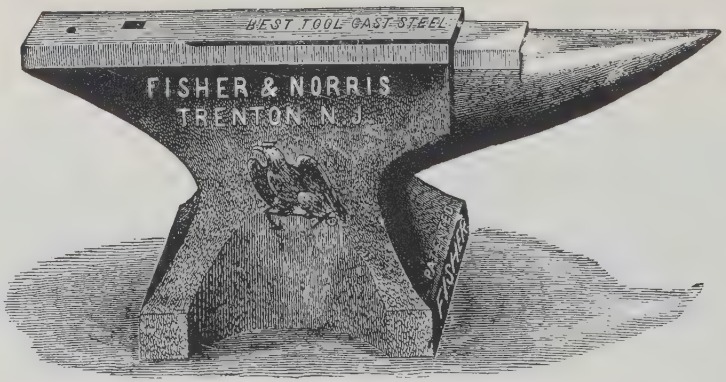

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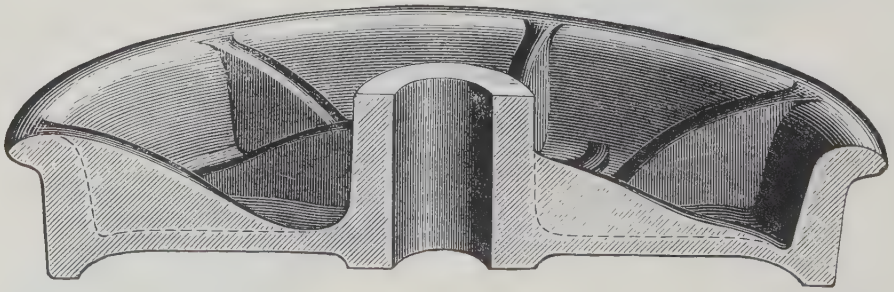

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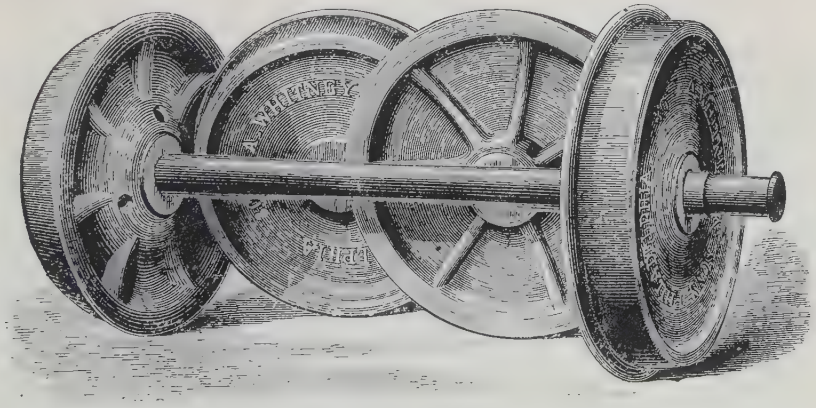

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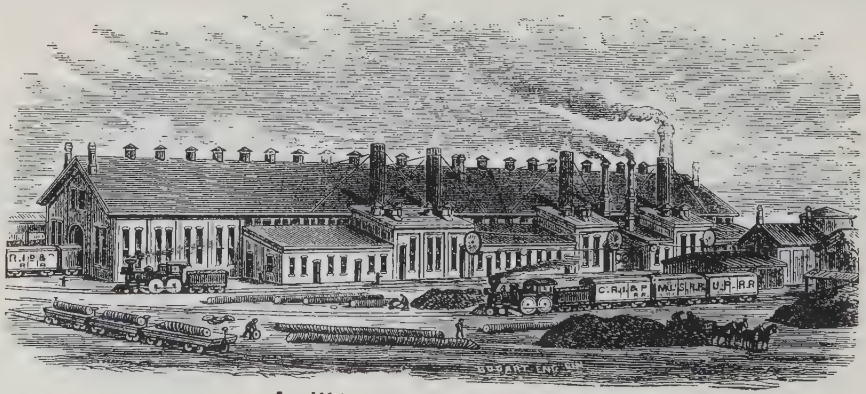

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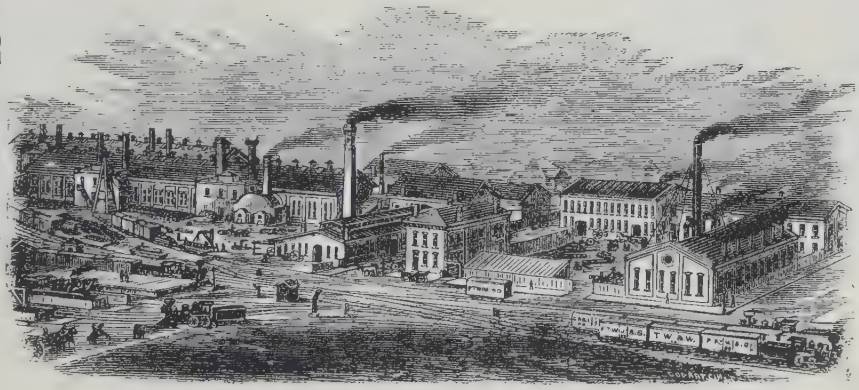

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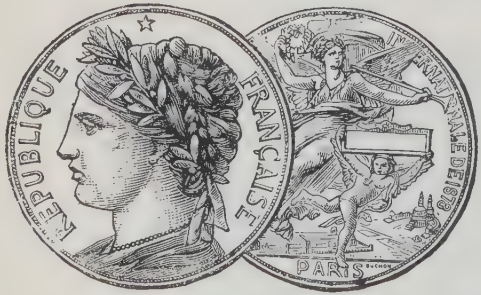

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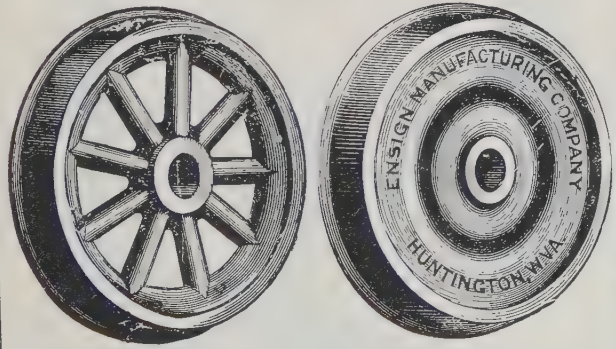

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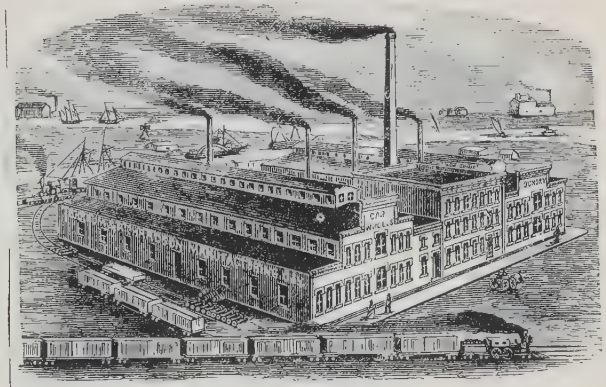

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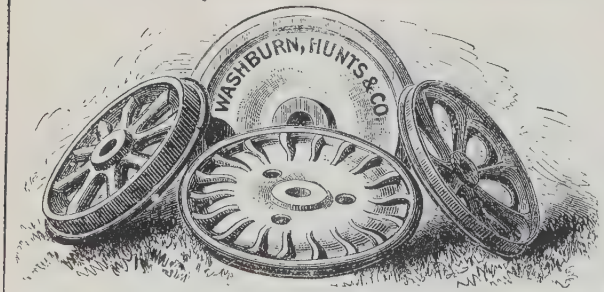

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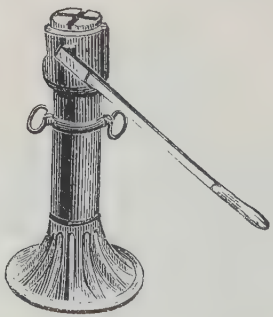

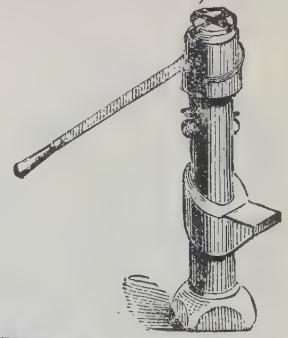

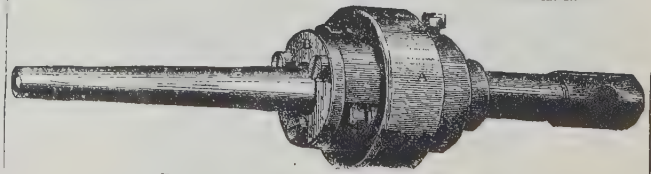

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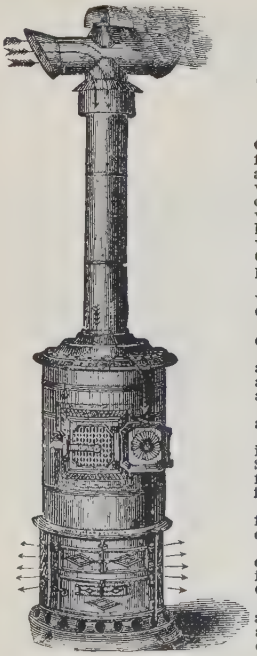

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SPEAR'S RAILWAY CAR HEATER AND VENTILATOR.

THE MOST PERFECT CAR HEATER AND VENTILATOR EVER INTRODUCED IN RAILWAY CARS.

All persons who have traveled in Railway Cars know from experience how uncomfortably hot the seats are near the Stove, and how often they are obliged to raise the windows to be relieved, to the annoyance of passengers at a distance from the Stove, who are suffering from the cold; and also how ILL-VENTILATED most of the Railway Cars are, on account of the air in the Car coming in contact with the heated plates of the Stove.

We claim for our Stove the following advantages over any other in use for Railway Cars:

FIRST.—An equal quantity of hot air is distributed throughout the entire Car.

SECOND.—Persons sitting near the Stove are not hotter than those at a distance, and are not obliged to open the windows to the annoyance of others.

THIRD.—All the impure air is driven out at the top of the Car.

FOURTH.—The air in the Car never comes in contact with the heated surface of the Stove, as all the air that is heated is brought fresh from the *outside of the Car*—thus heating and ventilating the Car at the same time.

FIFTH.—There is no danger of accidents from passengers' clothing taking fire by coming in contact with the Stove.

SIXTH.—In numerous cases where Cars containing this Stove have been overturned, it has never been known to set fire to the Car, or even to be moved out of its place.

Send for Circular, with full description, and prices of coal or wood burning heaters and ventilators, for passenger, sleeping or cabin cars.

JAMES SPEAR.
1014 and 1016 Market Street,
PHILADELPHIA.

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J. THOMAS & SONS,

Successors to Thomas, May & Co.,

MANUFACTURERS OF THE STANDARD

CAR & LOCOMOTIVE WHEELS.

Spoke Engine Truck Wheels a Specialty.

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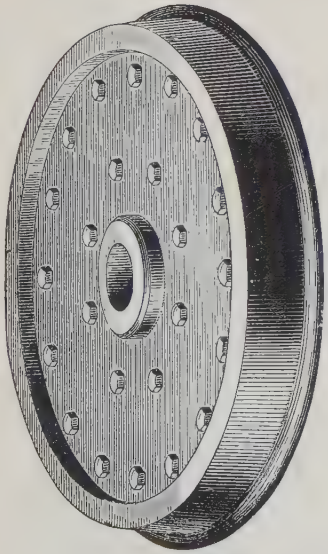
Indianapolis, Ind.

HUDSON PAPER CAR WHEEL CO.,

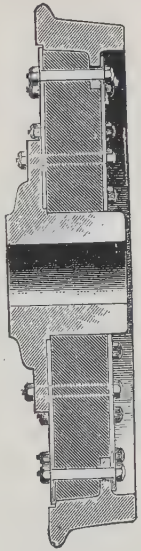


JOHN E. GILLETTE,
President.

R. N. ALLEN,
Superintendent.

HUDSON,

N. Y.

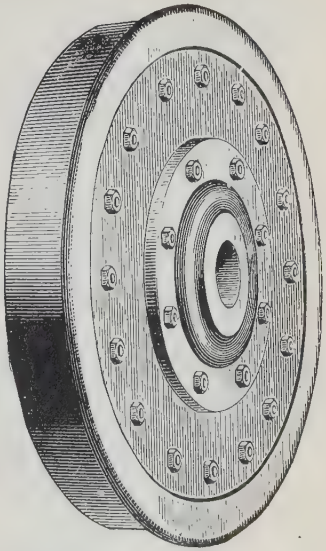


MANUFACTURERS

OF

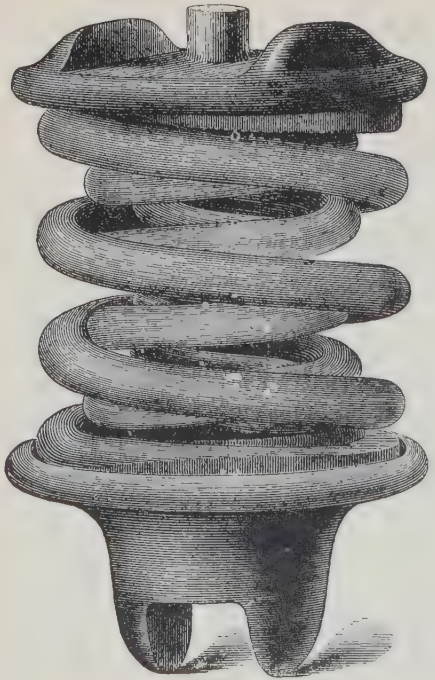
ALLEN'S

PATENT



PAPER CAR WHEEL.

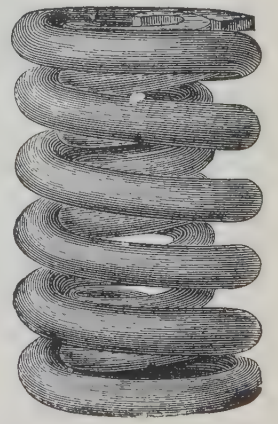
ALL SIZES. Especially adapted for Sleeping and Drawing-Room Cars, Locomotive and Tender Trucks. Steel Tire, with annular web—strongest, most durable and economical wheel in use.



CULMER SPRING CO.

RAILWAY CAR SPRINGS.

Spiral Buffer,
Freight Bolster,
Journal and
Equalizing Bar Springs.



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STREET-CAR TRIMMINGS,
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Estimates furnished for any quantity and styles of Railway and Telegraph Equipments in all departments, and orders executed at the lowest prices,

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CLEVELAND RUBBER COMPANY.

Our Company was incorporated in 1872, since which time it has never ceased operations for a single day for lack of orders, and although its capacity for manufacturing has been many times doubled since the start, yet to-day we find ourselves able to meet the demands made upon us only by working two forces of men. We will again enlarge our works this fall. We ask the trade and consumers to give our products a trial.

RUBBER HOSE.

Our White Shield Fire-Engine Hose resists a pressure of 400 lbs. to the square inch Our Air-Brake Hose, is made extra good, to insure strength and durability; ends capped. Our Steam Hose contains an extra heavy tube that resists the action of steam. All sizes of standard hose kept constantly in stock. Tank and Suction Hose of any size and length made to order

VALVES.

Pure Para Rubber Valves, and all sizes and styles of ordinary valves made to order.

We are prepared to make iron moulds for casting rubber to any form.

RUBBER BELTING.

Made of heavy cotton duck, coated with a smooth surface of india rubber Warranted.

RUBBER SPRINGS.

Caoutchouc or India Rubber is the most elastic substance known to commerce. It is not affected by air, moisture or heat. It will not rust or rot. Its elasticity is absolutely indestructible, and its durability is greater than any part of that which it will save from wreck by vibration. These qualities make it better adapted for springs and cushions than any other known article. We speak of good Rubber spring and not that "mixture," so called, which has been the means of throwing all rubber springs out of use to so large an extent. State what weight each spring is calculated to carry, and about how much they can settle and vibrate under that weight, in ordering.

GASKETS, ETC.

Ordinary kinds and sizes of Gaskets kept on hand; special kinds or styles made to order in five days. Pure rubber tubing and tubing with cloth insertion, rubber cords and strips of any size and length, rubber rings of all kinds and rubber of any design or shape for any mechanical purpose, we are prepared to make as ordered, on short notice.

PACKING.

Sheet Packing, two qualities and all thicknesses; round and square packing, a superior article made of best cotton duck, kept on hand.

RUBBER BLOCKS

for cushions, or rubber made in any required shape for springs or bumpers.

FACTORY, ON C & P. R. R., NEAR WOODLAND AV.

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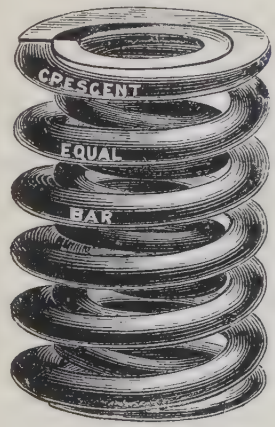

CRESCENT STEEL WORKS,

MANUFACTURERS OF

Equal Bar Nest (flat and round coil), Round Bar Nest, Group Spiral, Crescent Edge-Rolled, Flat Bar Nest, Volute,

AND OTHER SPIRAL

RAILWAY CAR SPRINGS,

From Crucible Cast Spring Steel,

81 WOOD STREET, PITTSBURGH, PA.

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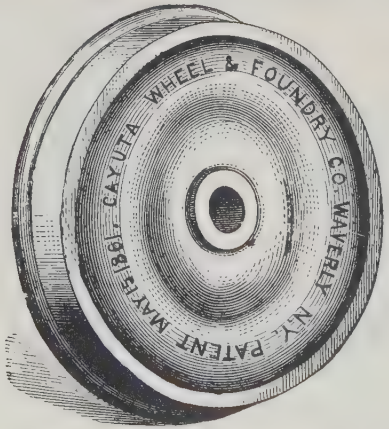
CAYUTA WHEEL AND FOUNDRY CO.

Waverly, N. Y.

ALL OUR WORK FULLY GUARANTEED.



Manufacturers of all classes and sizes of WHEELS from the best of Charcoal Irons.

REGINALD CANNING, Superintendent.

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MANUFACTURERS OF THE

VARIABLE STROKE

POWER MORTISING MACHINES

With Auxiliary Boring Attachment. The Best and Cheapest Mortising and Boring Machine in the Market.

BALANCED RAILWAY SAWS.

Shafting, Hangers, Pulleys and Couplings

OF THE BEST MATERIAL, DESIGN AND WORKMANSHIP.

Descriptive Catalogues and Prices furnished on application to

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Stationary and Portable Engines, Saw Mills and General Machinery.

KEYSTONE SPRING WORKS.

CHARLES SCOTT,

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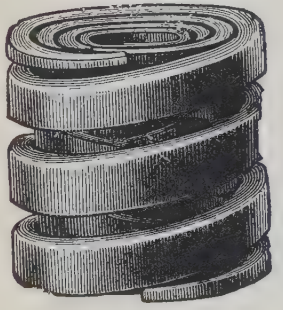
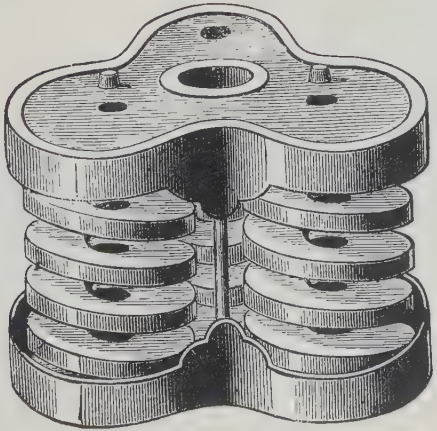


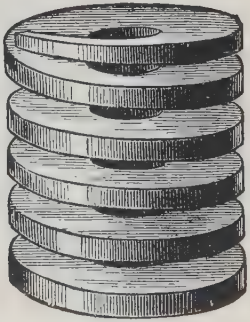
SPIRAL SPRINGS

OF

ALL DESCRIPTIONS.



PATENTED



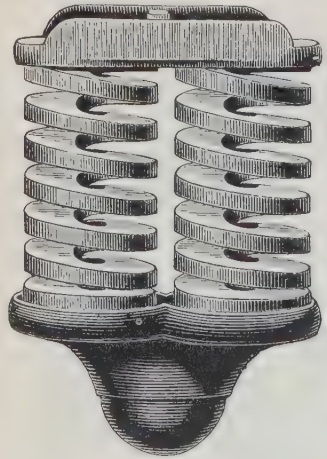
OFFICE AND WORKS:

1016, 1018 New Market St.,

PHILADELPHIA, PA.

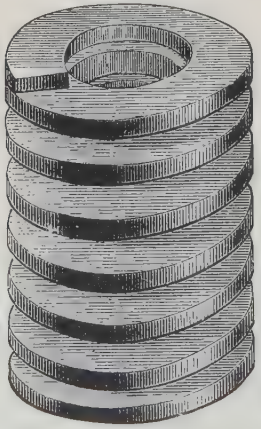
DIAMOND STATE CAR-SPRING WORKS.

DIAMOND STATE EDGE-ROLLED EQUALIZING-BAR SPRING. *Patented July 7, 1874. Reissue March 9, 1875.*



2 Spirals to the Case; 8 to each set; height to meet specifications; furnished with or without castings.

Bolster Springs made to order, of Edge-Rolled, "*Patented*" spirals, two, three or four coils to case, as required, four cases to set, either with or without castings.



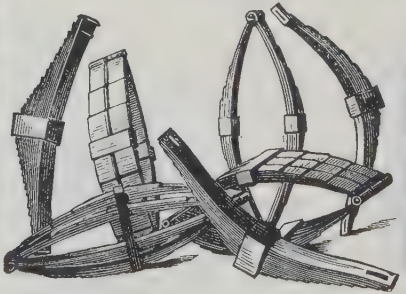
EUREKA EDGE-ROLLED BUFFER SPRING.

JAMES P. HAYES,

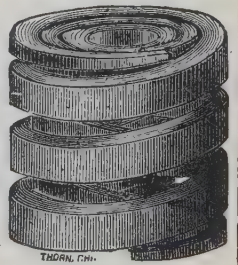
Eighth Street and P., W. & B. R. R.,

WILMINGTON, DEL.

Established A. D., 1841.



ELLIPTIC AND LOCOMOTIVE SPRINGS of every description made to order.



HEBBARD SPRING. All sizes and any number of coils required.

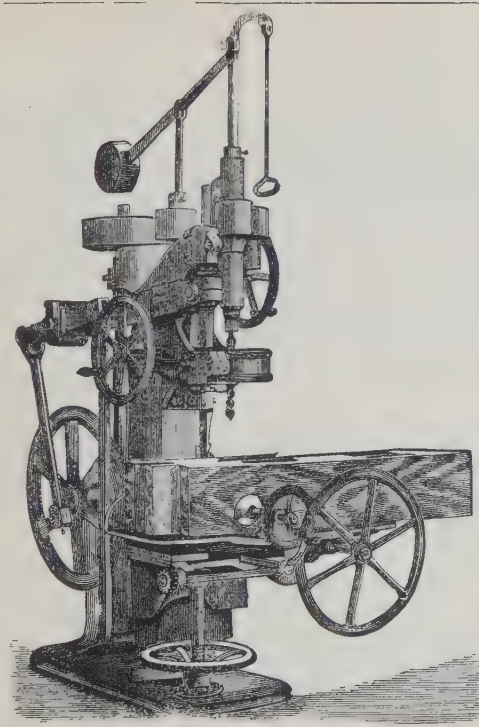
MANUFACTURERS OF

IMPROVED FLAT AND ROUND BAR NEST SPRINGS,

Of the best Grade of Crucible Cast Spring Steel. Also,

SPIRAL SPRINGS OF EVERY DESCRIPTION MADE TO ORDER.

JAMES C. PICKELS, Gen'l Agent.



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FOR

RAILROAD SHOPS, CAR-BUILDERS,

Planing Mills, Bridge-Builders,
Cabinet, Carriage, Sash, Door
and Blind Makers.

SEND FOR NEW CATALOGUE.

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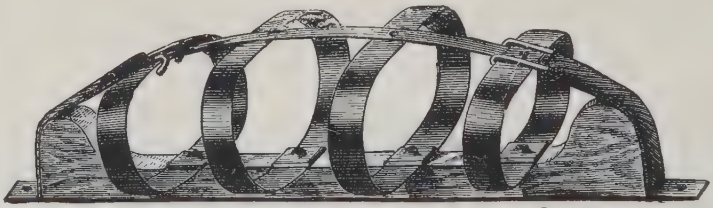
31st and Chestnut Streets, - - - Philadelphia, Pa.

COBB'S NEW AND IMPROVED



[SIX SECTIONS LIKE THE ABOVE IN EACH SEAT.]

Elliptic CAR-SEAT SPRINGS.

CAR-BUILDERS AND RAILWAY OFFICIALS

are respectfully invited to examine our latest improvements in **Car-Seat Springs.** Our long experience in this particular line of business enables us to meet all requirements, overcome difficulties, and present to our customers a superiar spring, light, durable and elastic, combining the advantage of repairing WITHOUT DISTURBING THE UPHOLSTERING, a feature highly important, and only to be obtained by *our method of construction* and for which we are *sole owners of the Letters Patent.* The material used is the very finest quality of flat, tempered steel wire, three-quarters of an inch wide, and, considering the superior finish, they are the most economical springs in the market. They are sold in sections, as shown in the above cut, and being so arranged to form the foundation the necessary shape, it makes the upholstering easy for the most inexperienced.

Specify this spring in your contracts and we will guarantee satisfaction.

Samples and estimates will be furnished upon application.

BEWARE OF INFRINGEMENTS.

H. B. Cobb's Patent, dated July 10, 1866, is sustained by a recent decision of the United States Court and covers the following points:

1. A spring-seat or cushion having its springs adapted for application to and removal from the seat or cushion frame *without disturbing the covering or upholstering.*

2. The springs of a seat or cushion adapted for application to and removal from the seat or cushion frame through the bottom of the latter *without disturbing the covering or upholstering.*

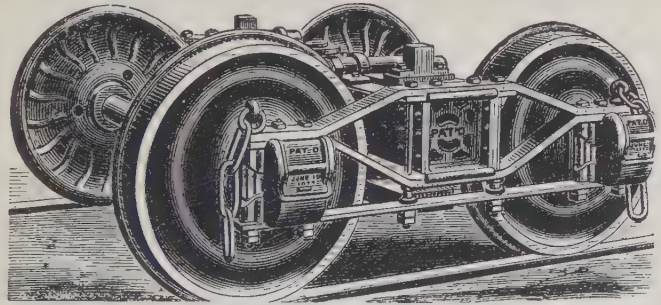
3. A series of springs for spring-seats or cushions, *each spring* having the *general form of an ellipse*, mounted transversely upon a wooden or other support which is adapted for application to the seat or cushion-frame for the purpose specified.

The following are a few of the prominent users of Cobb's Patent Car-Seat Springs:

Pullman Palace Car Company; Woodruff Sleeping Car Company; Lucas Sleeping Car Company; Pennsylvania Railroad Company; Pittsburgh, Fort Wayne & Chicago Railroad; Pittsburgh & Lake Erie Railroad; Philadelphia & Erie Railroad, Philadelphia, Wilmington & Baltimore Railroad; Baltimore & Ohio Railroad; Kansas City, St. Joseph & Council Bluffs Railroad; Harlan & Hollingsworth Company; Jackson & Sharp Company; Ohio Falls Car Company.

H. B. COBB & CO., Wilmington, Del.

THE THIELSEN TRUCK CO.



This truck, which is represented by the above engraving, consists of outside frames made entirely of iron, and instead of wooden cross pieces rolled channel bars are used, the ends of which are securely riveted to cast-iron end-pieces attached to the outside frames, as shown above.

This truck is cheaper and lighter than most of the wooden swing-beam trucks in use, and much more durable and economical, costing less for repairs, as there are no timbers to shrink or decay and no bolts to work loose. Owing to the secure manner in which the truck is held square, by the channel bars and castings, the frames are not so likely to get out of line as they are in other trucks, and consequently there is less liability of hot boxes. It has been adopted as the standard truck on the Michigan Central, Chicago, Burlington & Quincy, Flint & Pere Marquette, and Atchison, Topeka & Santa Fe Railroads, and has also recently been introduced on the Kansas City & St. Joe, Atchison & Nebraska, and several other prominent Western roads.

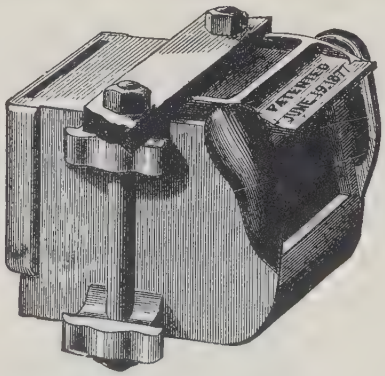
For information regarding its working we would refer to the following prominent railroad men, who have had it in use on their lines for several years:

J. C. McMULLIN, Chicago, Gen. Man. C. & A. R. R.; C. E. PERKINS, Chicago, Vice-Pres. C., B. & Q. R. R.; WM. B. STRONG, Gen. Man. A., T. & S. F. R. R.; H. B. LEDYARD, Detroit, Gen. Man. Mich. Cen. R. R.; G. H. NETTLETON, Kan. City, Gen. Man. K. C., S. F. & C. B. R. R.; L. W. TOWNE, Atchison, Gen. Supt. Atch. & Neb. R. R.; S. KELLER, East Saginaw, Supt. F. & P. M. R. R.

For information respecting terms, specifications, estimates, etc., apply to the

THIELSEN TRUCK CO., 122 Randolph St., Chicago, Ill.

HEWITT BOX LID CO.



ITS ADVANTAGES ARE:

FIRST.—It cannot be taken off.

SECOND.—That it is always in place and always closed when the car is in motion.

THIRD.—Its simplicity and easy adjustment, which commend it at once to all oilers and yard-men.

FOURTH.—Its tightness, and the AVOIDANCE OF ANY NUTS OR FASTENINGS TO LOOSEN.

It is now in use on many prominent Railroads, and universally indorsed as being the best and most economical cover in use. Address

HEWITT BOX LID CO.,

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MICHIGAN CAR COMPANY,

MANUFACTURERS OF

BOX, STOCK, PLATFORM, COAL, HAND

AND ALL OTHER DESCRIPTIONS OF

FREIGHT CARS.

Works: Grand Trunk and Michigan Central R. R. Junction.

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CAR WHEELS,

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Manufacturers of all Descriptions of Forged Wrought Iron, Car and Driving Axles, Coupling Pins, Links, Shafting, Draw Bars, etc. Car and Railroad Work a Specialty.

Office: No. 2 Moffat Block, Detroit, Mich.

Works on River Road, near Clark's Dry Dock.

JOHN B. BAUGH, Manager.

WM. G. CREAMER & CO.

(ESTABLISHED 1857),

96 JOHN ST. AND 19 PLATT ST., NEW YORK,

MANUFACTURERS OF

EVERYTHING MADE OF METAL FOR THE INSIDE OF A RAILROAD PASSENGER CAR.

SEAT FRAMES, SAFETY BRAKES, DOOR LOCKS, VENTILATORS, BASKET RACKS, LAMPS, CANDLE BURNERS, FOOT RESTS, BELL-CORD TRIMMINGS, PUMPS FOR SALOONS, SASH LOCKS, WINDOW LIFTS, SEAT ARMS, SEAT LOCKS, HEAD LININGS, ETC.

Also, Fine Iron Bronze and Brass Castings. Plating, Japanning, Spinning and all kinds of Sheet Metal Work. Special Patterns when desired. Miscellaneous Supplies of all kinds furnished to order, when required, at best rates.

Factory occupies the Block bounded by

COURT, GRINNELL AND SMITH STREETS,

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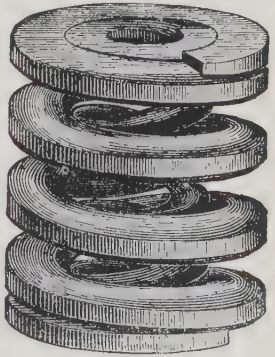
RAILWAY CAR SPRINGS.

NATIONAL CAR SPRING COM'Y,

RICHARD VOSE, President,

13 Barclay Street, - - - - - New York.

CLIFF BUFFER SPRING.



TWO-COIL—CAPACITY, 20,000 lbs.

Diam., 5¾ in.; Hight, 7 in.; Weight, 29 lbs.

ALEX. DeLANO,
Treas. and Manager.

H. R. NEWBURY,
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DETROIT, MICH.

DETROIT CAR SPRING CO.,

MANUFACTURERS OF

ROUND AND FLAT,

BAR, NEST AND SPIRAL SPRINGS,

FROM BEST CAST STEEL,

DETROIT, MICH.

NEW YORK OFFICE: 46 Cortlandt Street.

J. H. KING,
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PERFECT VENTILATION FOR RAILROAD CARS.

Absolute Comfort for the Traveling Public.

SOMETHING NEVER BEFORE ATTAINED.

THE

UNIVERSAL VENTILATORS

are guaranteed to thoroughly ventilate railroad cars, supplying fresh air without admitting rain, dust or cinders, and exhausting the *foul air* generated in the car. These ventilators are in use on a great many roads, and in every case they give entire satisfaction. They are pronounced to be the only perfect Car Ventilator. Twelve to sixteen required to each car.

We will supply enough to fit up one passenger or smoking car for $3 each, and will make no charge for them unless they give satisfaction.

They are adapted to cars in use, and can be easily applied. We save more in car upholstery, by excluding dust and cinders, than the cost of the ventilators.

We have lately reduced the price of these Ventilators to $4 each, and they are now cheaper than any other Ventilator—and they perfectly accomplish what we claim for them.

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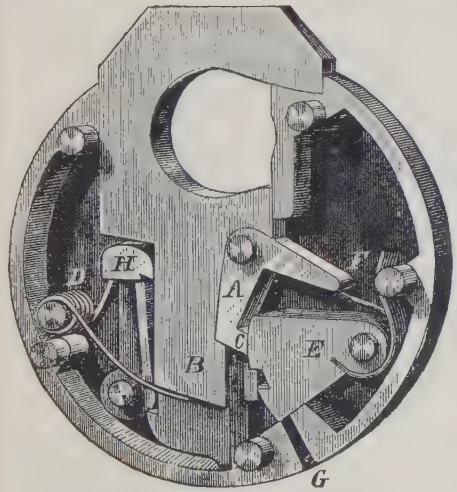

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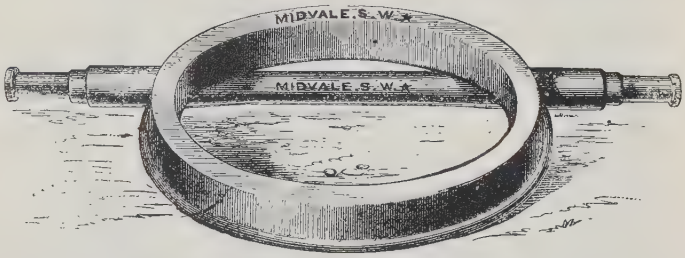

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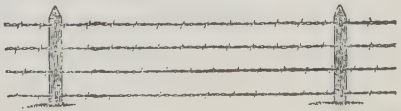

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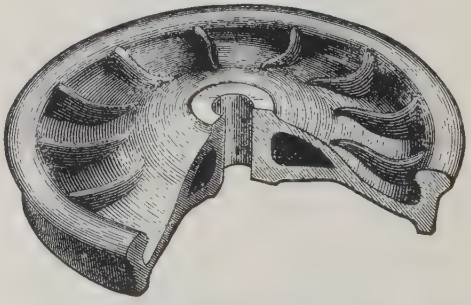

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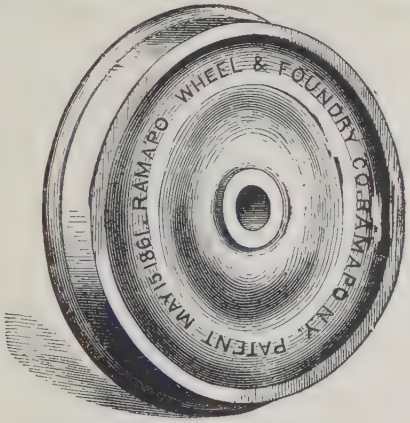

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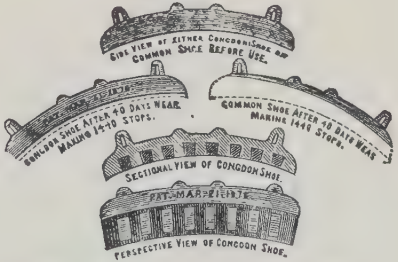

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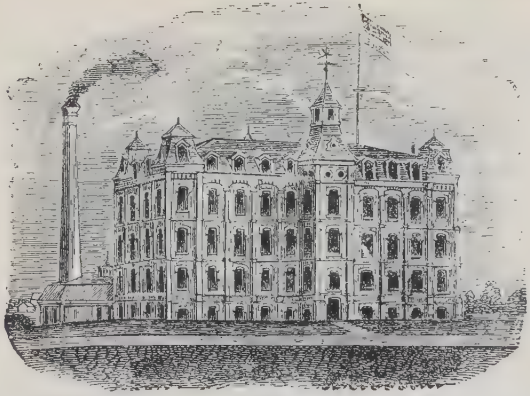

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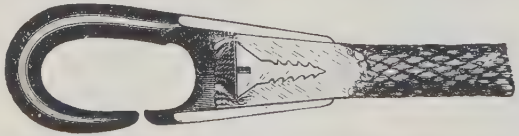

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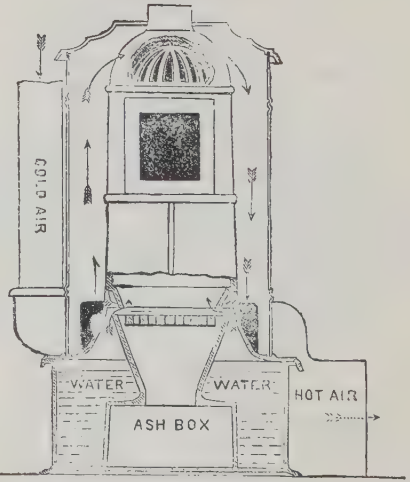

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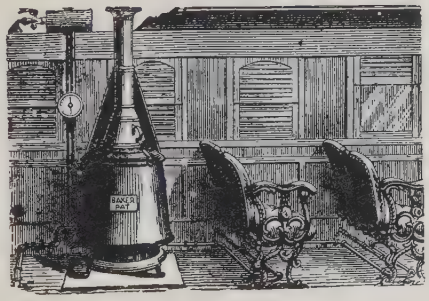

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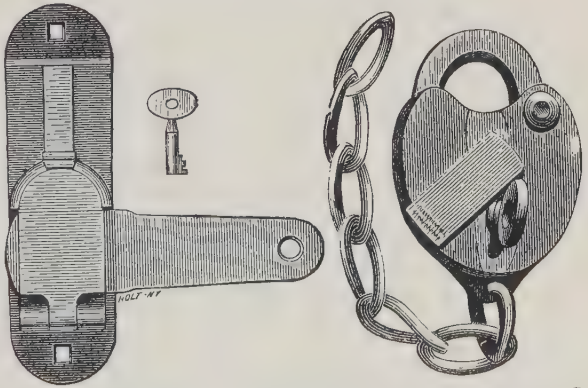

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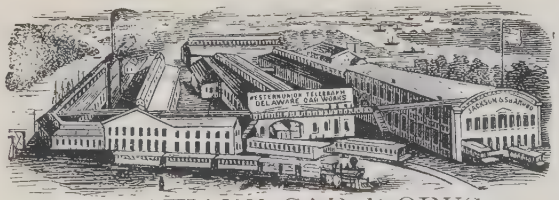

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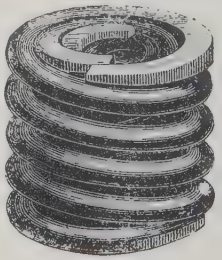

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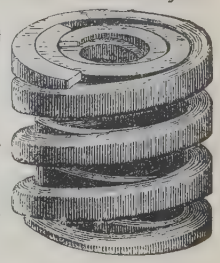

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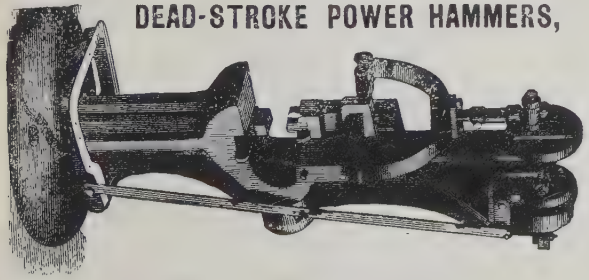

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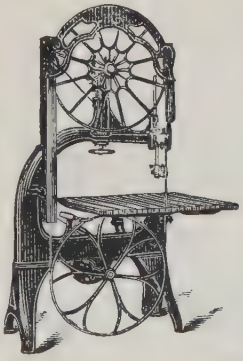

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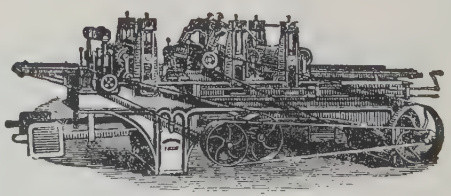

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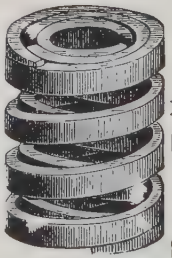

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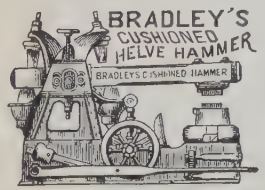

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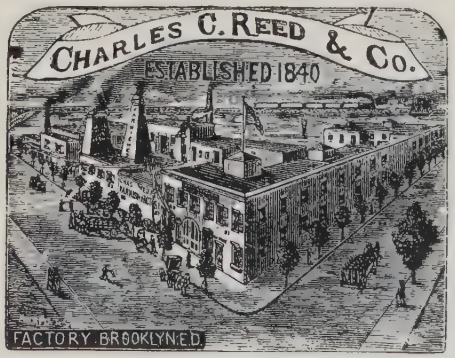

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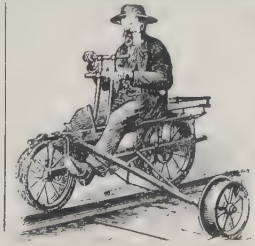

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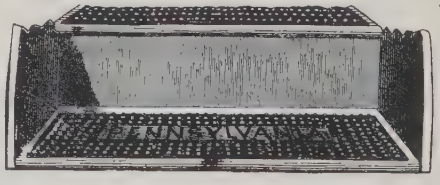

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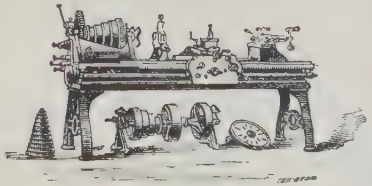

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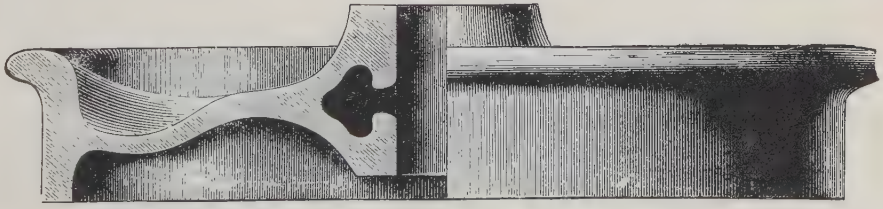

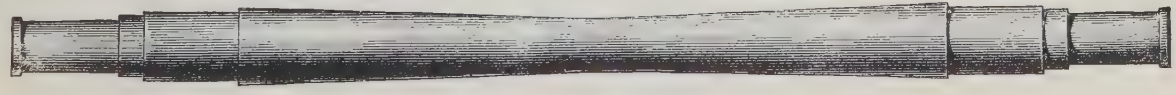

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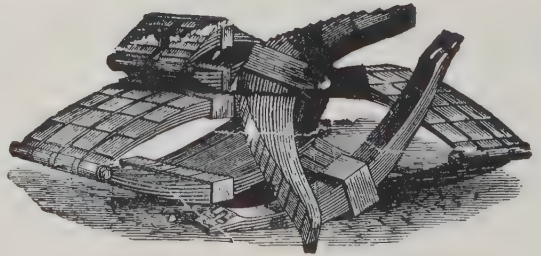

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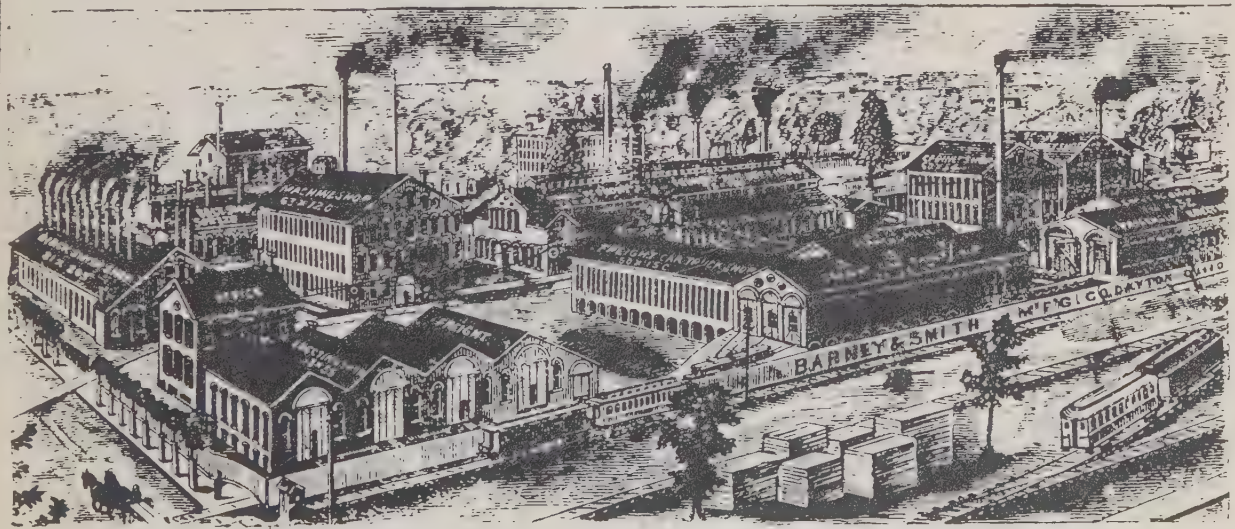

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